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AMERICAN SAMOA.

BY

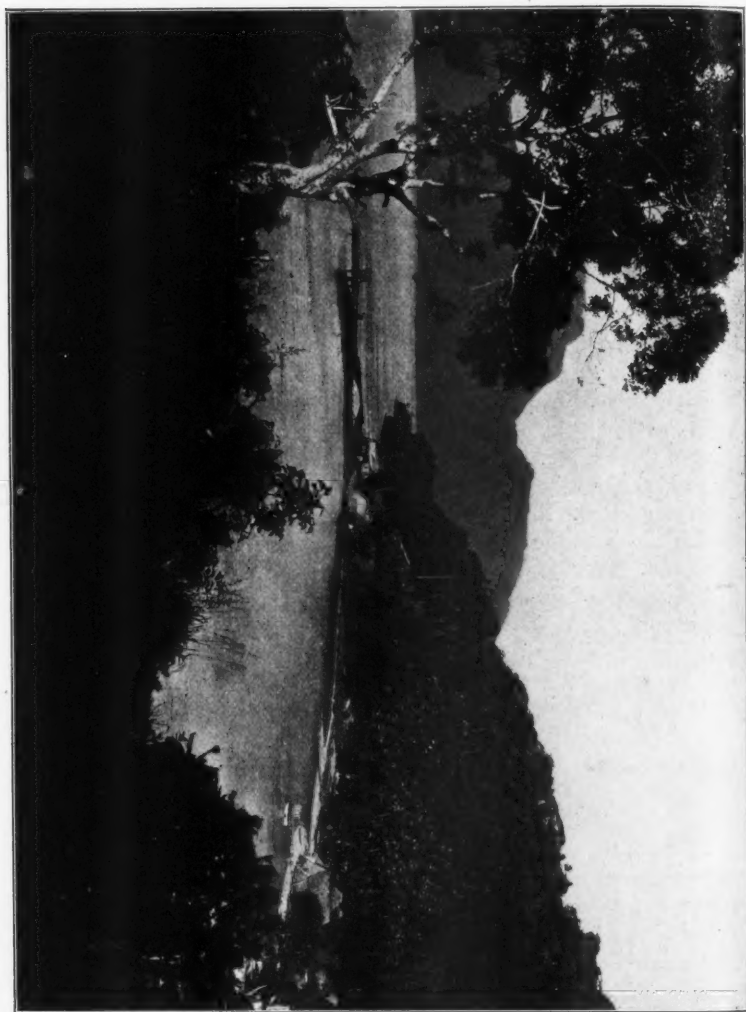
FRANK TAYLOR CHAMBERS, C.E., U. S. N.

The Samoan Islands lie between the 169th and 173d meridians of west longitude, and between the thirteenth and fifteenth parallels of south latitude. The group consists of a number of small islands, but only Savaii, Upolu, Tutuila, and Manua are of any importance. The first of these is the largest, having an area of about 700 square miles, but its surface is so rugged that it is said certain portions have never been penetrated. It is Upolu, with an area of about 550 square miles, which furnishes the bulk of the exports, principally copra, or dried cocoanut. Tutuila, with an area of about 55 square miles, is similar in formation to Upolu, and furnishes its fair proportion of the principal export. In Upolu, however, a German company has, for years, had large areas under cultivation, and this, with its much greater size, has given it the advantage of trade.

From 1879 to 1900 the islands were practically under the jurisdiction of Germany, Great Britain, and the United States, though the Consuls of the three Powers, who directed the government, had little real authority beyond the vicinity of Apia, the principal town, which lies on the north shore of Upolu.

It is not the purpose of the writer to enter into the many differences between the representatives of the tripartite Government and the constantly-occurring petty wars between the native factions. Suffice it to say that these matters resulted in 1899 in the appointment of a High Commission of the Powers concerned, which finally decided upon a division of the territory. Great Britain, in return for concessions in the Tonga group, relinquished her share to Germany, which, therefore, was awarded by far the greater portion—i. e., all

those islands lying west of the 171st degree of west longitude, the United States taking all lying east of the same meridian. This country had, since 1878, possessed treaty rights to the principal harbour;

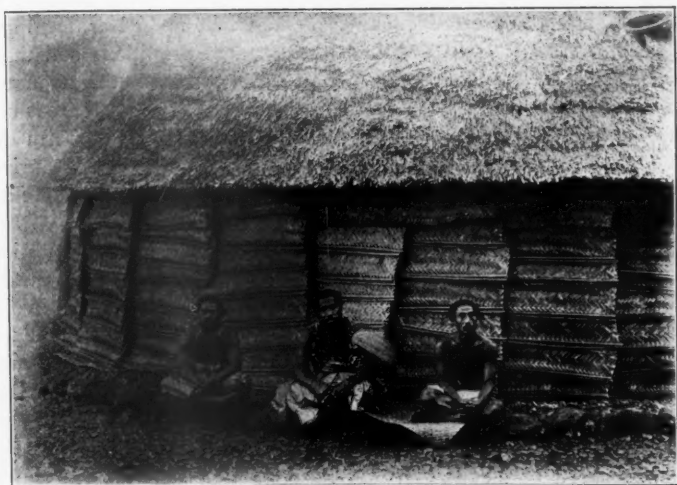


GOVERNMENT STATION FROM HILL BEYOND PAGO TOGA.

that of Pago Pago, which nearly severs the island of Tutuila. In fact, for some years it had had a coal pile there, and, at the time of

the appointment of this High Commission, had begun to establish coalsheds and wharf of substantial character.

On the seventeenth day of April, 1900, the United States flag was formally raised on the island of Tutuila and government assumed over that part of the group now recognized as American Samoa. Coming, at it did, so soon after our occupation of the Philippines, and at a time when our military and naval activities were large, this incident received comparatively little notice here. In Tutuila, however, it was naturally a great event. Pago Pago Bay became a very active centre, the shores and shallow waters became dotted as never before



HIGH CHIEF MAUGA, HEAD OF PAGO PAGO BAY VILLAGES—HIS "TALKING MEN" TO RIGHT AND LEFT. NATIVE HOUSE, WITH CURTAINS DOWN.

with the small boats of the people of more distant settlements, and the capacity of the houses of the surrounding villages was strained to the utmost. The population was highly pleased with the change of government, speeches were made by prominent natives at the flag-raising ceremonies, and a paper, signed by all the principal chiefs, was handed to the Naval Governor expressing satisfaction thereat and welcoming the new order of affairs. There was a general celebration afterwards, consisting of feasting and games of all sorts known to the natives and of many more introduced by the officers of the naval station-ship having that part of the entertainment in charge.

The islands called Tau, Ofu, and Olosega, lying some seventy

miles east of Tutuila, have a combined area somewhat less than the latter, and are generally designated under the group name of Manua. They are of the same general formation as the larger islands, and produce a sufficient quantity of copra to attract periodical visits of the small trading schooners. As these islands lie so far from the larger and more central ones, the inhabitants have held themselves somewhat aloof from the others, have had their own government, and at times have refused to recognize any central authority. These are said to have been the first of the group to be settled, and their high chiefs have even claimed precedence over those of other islands. When informed that the United States had assumed government over them they were at first inclined to demur, but, upon learning that there was no intention to disturb then-present conditions and that their high chief would retain his position, they agreed to the arrangement. As they have not the advantage of a good harbour, there is no reason why they should be disturbed in present habits or form of government, and as, like all other Samoans, they are professed Christians, having their own teachers and church organizations, there is no opening even for the foreign missionary.

Excepting Rose Island, a coral atoll, picturesque enough with its fringe of cocoanut palms around the inner lagoon, but entirely useless from a commercial or naval standpoint, the islands are all of volcanic formation, largely mountainous, and too small in extent to become of much commercial importance from their own yield. First impressions of scenic Samoa are not soon to be forgotten. The islands are brilliant green from water's edge to highest mountain top with the tropical vegetation. Steep as the hillsides are, there is scarce a bare spot to be seen, though an occasional vertical wall of rock defies all but creeping vines to maintain a footing. The varied shades of blue and green of the water from that of the deep sea to the lighter colouring over the reefs, the cresting of the surf, lend a most attractive foreground, while a species of small sea bird, pure white, ever to be seen soaring in pairs against the emerald background of the hills, rarely fails to throw the novice in tropical scenery into an ecstasy of delight. Upon closer acquaintance, the traveller will learn that, underlying the network of trees, there is a mass of vines and undergrowth which renders progress across the islands, except by a few beaten paths, difficult and, without a free use of the knife, sometimes impossible. The mountainous conditions, of course, add largely to the trouble. Despite the small extent of our main island of Tutuila, five miles by seventeen, some of its mountains are of considerable height, the greatest, Matafau, being over twenty-three hundred feet.

The native products are cocoanuts, bananas, mangoes, taro, yams, and breadfruit. Of these, cocoanuts, in the form of copra, are practically the only export. Cacao grows well, but has not, so far, been planted to any considerable extent on the American islands. Owing to the small area available for cultivation, it is unlikely that many white planters will be attracted to settle. Laws established by the three Treaty Powers, and since upheld by the Naval Governor, tend further to restrict the immigration of the white man. These laws were drawn with the purpose of preventing the alienation of lands from the native owners. No foreigner is allowed to purchase real estate from the Samoans, so the only property on the market is that acquired from them previous to the institution of the law. Various schemes have been tried, however, to gain valuable land, the most successful being that of marriage into a native family. The law does provide for the lease of land, and the limit of forty-nine years is set. The natives, themselves, do little planting. Cocoanuts, breadfruit, and taro require no attention, and a few hours of each week spent in the taro and tobacco patches suffice both for the necessities and for luxury. So the life is, on the whole, one of idleness, the people being much more intent upon the organization of excursions to other villages, where the whole party lives for days upon the bounty of friends, than upon enriching themselves by manual work. This, of course, is principally due to the enervating climate, but largely also to the communistic method of life, the earnings of the individual going into the common fund of the family, which does not necessarily consist of blood-relatives. A large family with a good name is a power, and adoptions are often made into it for purposes of strength.

Despite the attractions of some foreign importations, such as cloths and canned goods, it is difficult, and, at times, almost impossible, to secure native labourers even at the rate of one dollar for eight hours. By dealing with the high chiefs, it is possible to get a gang for six days' engagement, changing to a new crowd from a different village for the ensuing week. Even then the work is most indifferent, and the accomplishment for the latter half of the time sadly below that at the beginning. Some petty chiefs usually come in a gang, and seem to hold it a privilege to draw pay while doing little or no work. Strikes have been had, too, and though organized labour is apt to be looked upon as more or less of a civilized institution, advancing in power with the times, it is safe to say that no American trade-union ever held its men more rigidly in line than do the Samoans when they decide to quit work. The trust element also exists, and meetings of chiefs fix prices upon chickens, eggs, and other commodities, enforcing adherence thereto on the people.

The voyage to Samoa is made in thirteen days, the trip being broken midway by an all-day stop at Honolulu, H. I. American line steamers leave San Francisco at intervals of three weeks for Sydney, Australia, stopping at Honolulu, Pago Pago, Auckland, and Sydney. Until the United States assumed control at Tutuila the steamer line had used the harbour at Apia; but this is extremely unsafe in the hurricane season, and the company lost little time after the flag-raising in changing to Pago Pago as a port of entry. This harbour has something of the shape of a shoe, is landlocked, can be



NATIVE GIRLS WITH WAR CLUBS.

entered at any time, and is perfectly safe in all weathers. It is deep, requiring no dredging, and stands to-day ready to furnish anchorage for a fleet.

The natives are a fine-looking race of light bronze colour. While their noses are flat and their lips rather thick, these features are much more comely than those of the Africans. The hair is straight, but its lustre is often destroyed by bleaching with lime, secured by burning the coral rock. It is a common sight to see heads plastered

white with the lime on Saturday as part preparation for the Sunday toilet. The men are large in stature, often over six feet, and the development of the torso is especially good, due, no doubt, to the constant use of the rowboat and canoe. Every young man, before he is recognized as a warrior, must be tattooed; and though the missionaries have tried to stop the practice, it still goes on without check. However, the candidate sometimes finds it expedient to visit another island to secure the decoration. As the design is nearly continuous from waist to knee, and presents much of the appearance of a pair of blue knee breeches when complete, it can be readily understood that the artist requires several days for the work. The operation in itself is quite painful, and when, as is customary, the victim has his lacerated skin bathed in salt water, no little is added to his discomfort.

The young women are often quite comely, but, like most of their sex in the tropics, soon lose their good looks. The Samoan takes but one wife at a time; but the process of divorce is simple, the husband having only to send his wedded partner home to her people, and, though all the natives profess Christianity, the missionaries have never succeeded in entirely stopping this practice. These missionaries have long since reduced the language to writing, and given the race a Bible and a dictionary, with other books of educational value.

The language is rather difficult to learn, and this the more so as there are two distinct methods of speech, it being decidedly bad form to use many of the words of the common people in addressing a high chief. Oratory is a fine art, and the position of chief talking-man, which is hereditary, is second only to that of the highest chief. Eloquence is by no means uncommon and is much in demand, as most of the affairs of the community are settled by conferences of the chiefs. The houses consist of thatched roofs, of dome shape, supported on posts about five feet high, and it is a common sight to see the orator leaning upon a tall staff, the mark of office of the talking man, haranguing the assembled *fono* from a distance. Though he stand on the opposite side of the village square from the guest house in which the chiefs are assembled, woe to the man, woman, or child who dares cross between the speaker and his audience.

The Samoans usually consider a marriage with the white man advantageous, and from the observations of a year's residence in the islands, it would appear that, with the continued influx of Americans and Europeans, the native blood will quickly become mixed. A taste for the dress of civilization is already spreading rapidly, and in all probability it will be but a short time until the Samoa of Stevenson, except for its picturesque hills, will be a thing of the past.

YOUTH, MATURITY, AND OLD AGE OF TOPOGRAPHIC FORMS.

BY

DOUGLAS WILSON JOHNSON.

The application of the terms "youth," "maturity," and "old age" to the progressive stages in the development of topographic forms has proved so helpful to a proper appreciation of the significance of many of these forms that all students of physiography are justly grateful for their introduction into physiographic terminology. In discussing the use of these terms with classes making a study of topography, I have found certain misapprehensions apt to arise unless specially guarded against.

It seems to me important to emphasize the fact that the terms in question are used by physiographers to indicate certain *stages* of development, rather than degrees of *age* as measured by the lapse of time. Because in the case of man stages of development termed youth, maturity, and old age are usually characteristic of certain periods of years, we attach considerable importance to the time element in the interpretation of the terms. That there is a difference between *stage* and *age* is apparent when we say that "some children mature while yet quite young," or that "a man ages rapidly." If this difference in the possible interpretations of the terms youth, maturity, and old age is brought clearly to the attention of the student, and he is made to see that the terms as used in physiography refer to stages rather than to age, he will have no difficulty in recognizing that a stream may be young where it cuts across a band of hard rock, and mature both above and below, where the rocks are soft, notwithstanding the fact that all of the parts of the stream in question may have existed for the same length of time. This distinction has, of course, been made by those who have used the terms to such good advantage in the past, but seems to require special emphasis when brought before the student for the first time.

In a paper on "The Geological Dates of Origin of Certain Topographic Forms on the Atlantic Slope of the United States,"* Professor Davis makes clear the meaning of "age" terms when used in a geographic sense. He says:

When topographic forms are thus described, age is not to be taken as a measure of time, but only as indicating the degree of development of the region concerned: a mushroom may grow old

* Geol. Soc. Am. Bull., 2, 1891, 545-584.

while an acorn has not advanced from its infancy: a low, weak mass under plentiful rainfall may soon be reduced nearly to baselevel—that is, to a nearly featureless peneplain—while in another part of the world a very hard mass in a dry climate might scarcely lose its constructional form in the same time. One would have become old in the same measure of absolute time as that marking the youth of the other. The two might have the same geological date of beginning, but one would become geographically old while the other was still geographically young.

Some difficulties have arisen as a result of the application of the terms youth, maturity, and old age to the general topography of a region, rather than to the individual features which go to make up that general topography. Remembering that these terms are applied



FIG. 1.—YOUNG STREAMS IN YOUNG PLAIN.
LASALLE QUADRANGLE, ILLINOIS. SCALE: ABOUT 1 MILE TO THE INCH.
CONTOUR INTERVAL 10 FEET.

to stages in the development of topographic features, and that different topographic features have totally different methods of developing, it will appear that confusion might easily arise if we try to classify a *region* characterized by diverse features as young, mature, or old. For example, the development of a river from youth to maturity is characterized by the establishing of a graded course, the retreat of the valley walls, the formation of a floodplain, the acquiring of meanders, etc.; the development of a plateau from youth to matur-

ity is marked by the progressive dissection of the plateau, more and more of the plateau surface being lost as the branching streams remove the rock, until that surface is nearly or quite destroyed.

Now, it is conceivable that a large volume of water flowing across a newly-elevated plain or plateau might develop a mature valley before the plain or plateau on either side had suffered any marked dissection. We would then have a mature stream valley cut in a young plain or plateau. To speak of such a case as an example of either youthful or mature topography, without further designation, would hardly be correct.

On the other hand, it is possible for a plateau region to be thoroughly dissected by an intricate network of streams, the streams having steep-sided, narrow valleys, but having branched so extensively that the former level surface of the plateau is nearly or quite destroyed. We would then have youthful stream valleys in a mature plateau. Such a region has been called a region in maturity. From the standpoint of the plateau this would be correct; but from the standpoint of the stream valleys the region is one of youth. Unless the beginner has some other means of knowing what is referred to, the statement that such a map represents a region in youth or maturity might cause no little misunderstanding. It is necessary clearly to understand that the entire topography of a region need not develop uniformly from youth to maturity and old age, but that the various elements of that topography may have different modes and rates of development. For the sake of clearness, it seems better to recognize the various elements of a complex topography separately, even where they happen to be in the same general stage of their several developments.

It is interesting to compare the extreme youth of a river with its extreme old age. It would seem that we are less familiar with types of these two stages of stream development than we are with the intermediate types. The first stage is so exceedingly short that we do not find many streams in that stage at any given time. The old age of a stream is so exceedingly long that before a stream can become well advanced in that stage some interruptional force such as crustal elevation, intervenes to change the whole process of development or start a new cycle.

The conditions under which streams may have their beginning are so diverse that it is unsafe to assume any one type of extreme youth as normal, regarding other types as abnormal. If water finds itself compelled to flow down the irregular, hummocky surface of morainal topography, the first stages in the development of streams

in that region will be marked by features quite different from those characterizing the first stages of stream development where water finds itself flowing down the even slope of a coastal plain; but in each case the features may be perfectly normal for the region in question. As a rule, some of the water which traverses land-forms for the first time has been collected into definite streams on adjoining



FIG. 2.—YOUNG STREAMS IN MATURE PLATEAU.
CHARLESTON QUADRANGLE, WEST VIRGINIA. SCALE: ABOUT 2 MILES TO THE INCH.
CONTOUR INTERVAL 100 FEET.

preëxisting regions, and so finds its way across the new region in a concentrated amount from the very first. The features normal to the streams developing under these conditions may be different from those normal to streams formed wholly by the run-off of the new region alone. Thus the streams which flow from the "old land" area out across the sloping surface of a coastal plain to the sea have

unusually straight consequent courses, and develop mature valleys incised in the plain more rapidly than do the smaller streams developing on the plain itself.

As a result of the marked seaward slope of a coastal plain, the extreme youth of a river formed by a large and concentrated amount of water flowing across the plain from the old land will be different

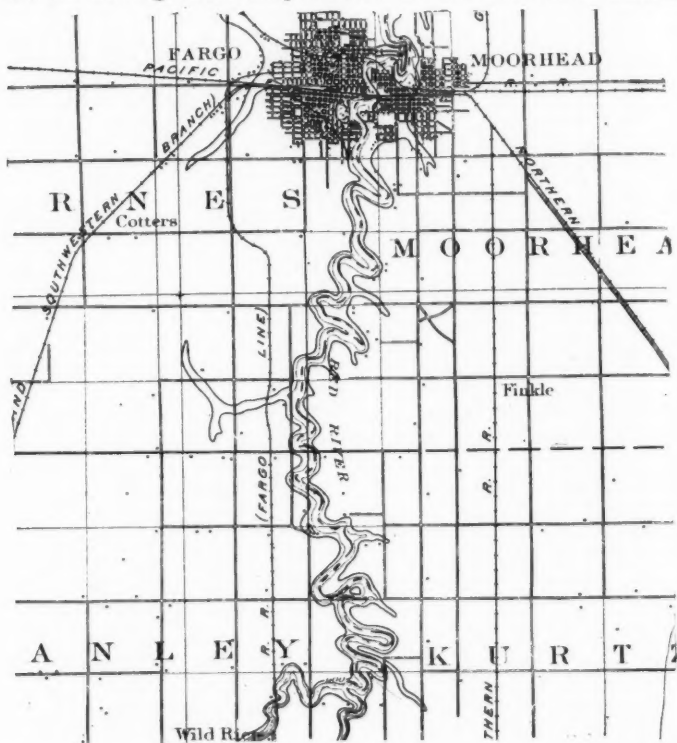


FIG. 3.--EXAMPLE OF A YOUNG PLAIN CROSSED BY A VERY YOUNG STREAM, WHICH HAS ACQUIRED MEANDERS SIMILAR TO THOSE DEVELOPED ON THE FLOODPLAINS OF MATURE STREAMS. FARGO QUADRANGLE, NORTH DAKOTA-MINNESOTA. SCALE: ABOUT 2 MILES TO THE INCH. CONTOUR INTERVAL 20 FEET.

from the same stage of a similar stream which flows out across the nearly level surface of a lake plain. In the latter case the conditions approach those existing on the floodplains of a mature river. There being no definite slope of a marked degree, and the material of the lake plain being more or less fine and homogeneous, the stream is readily deflected by trifling obstacles, and acquires good meanders.

It is thus seen that one of the features most frequently observed in mature or old streams may characterize the earliest stages of youth in a stream formed under certain conditions. Judging from available maps and reports, the Red River, near Fargo, North Dakota, affords a good example of this type of topography. It can hardly be regarded as an abnormal type, but is rather to be considered as one among a number of different types of youth, all of which are equally normal under their respective conditions of development.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY.

THE FIFTEENTH GERMAN GEOGRAPHICAL CONGRESS IN DANZIG.

BY

DR. AUGUST WOLKENHAUER,

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The German Geographical Congress, founded in 1881 by the well-known African explorer Nachtigal, held its fiftieth meeting during Whitsuntide week in the old and honoured trade town of Danzig, which, with its historical buildings and characteristic environs, must have delighted all the visiting geographers. The local authorities made excellent arrangements for the Congress, which will rank worthily with the meetings held at Breslau in 1901 and at Cologne in 1903. The Fifteenth Congress was particularly interesting because almost all the members of the German South Polar Expedition were present to give their official account of the results of their journey. It will be remembered that the return of the German Expedition to Africa was telegraphed to the Congress at Cologne.

Five scientific sessions were held, with a special topic for each meeting. The first session on Tuesday morning was devoted to the German South Polar Expedition. Professor von Drygalski, of Berlin, the leader of the party, gave a general account of the enterprise. As is well known, the German Geographical Congress, under the leadership of Neumayer, until recently director of the German Naval Observatory in Hamburg, had worked for twenty years to bring about a renewal of Antarctic exploration. At the Geographical Congress held in Bremen (1895) the movement began to take shape. The German Reichstag, later, granted means for the building of the

Gauss, the Expedition's steamer. Von Drygalski said the *Gauss* was the best ship yet built for polar exploration. The equipment of the vessel and the supplies furnished were all that could be desired.

After reaching the field of labour, the *Gauss* was soon caught in the ice, and spent the winter in $66^{\circ} 2'$ S. Lat. and $89^{\circ} 38'$ E. Long.

The staff of the *Gauss* has been severely criticised because its discoveries on land were insignificant, particularly as compared with those of the English Expedition. With regard to these criticisms, von Drygalski said:

We did not go to the Antarctic for sport or sensational achievement. Our chief task was the solution of geophysical and biological problems.

The discovery of Kaiser Wilhelm II. Land was very favourable for scientific purposes. The characteristics of the Antarctic continent in climate, geology, ice, and fauna are strongly marked there. As the *Gauss* was imprisoned in the ice, 80 kilometers from the land, the opportunities for sledge journeys on land were considerably smaller than those of the English Expedition; and the uniformity of the inland ice made such investigations scientifically unremunerative. On the other hand, the sea presented an abundance of most interesting problems. Particularly fascinating was the combination of physical and biological research methods. In the future exploration of the sea, the Drygalski method of combining these researches will undoubtedly be employed.

The members of the Expedition are still engaged in compiling the results of the explorations, which will be published in one comprehensive work, under the auspices of the Government, by the Department of the Interior. The work will be edited by Professor von Drygalski, and printed by Reimer, of Berlin. There will be ten volumes of text (large 4to) and three volumes of atlases. The volumes of atlas sheets will include the records of the observations of terrestrial magnetism and meteorological phenomena, and also synoptical weather maps. Two parts have already been published. Seventy collaborators are now engaged upon the botanical, zoological, geological, and other results. It is believed that the work will be completed by 1912.

After Professor von Drygalski, other members of the Expedition spoke. Professor Vanhöffen read a paper on "Some Zoogeographical Results." We gather from it that the distribution of earthworms and allied species in the Antarctic regions may be explained, although there is no connection of the Antarctic lands with the sub-Antarctic islands and the southern ends of the continental masses farther north.

It was found that, contrary to the results of observations made in

the northern hemisphere, the so-called warm-water fauna may live in temperatures as low as 1.9° C. The fauna of the Antarctic world has its own characteristic forms, differing from those of the sub-Antarctic coasts and also from those of the deep sea lying between them.

Dr. Hans Gazert, the physician and bacteriologist of the Expedition, gave an interesting account of "The Occurrence and Activity of Bacteria in the Sea."

In the absence of Dr. Philippi, the geologist, Professor von Drygalski read his paper on "Samples from the Sea Floor and Geological-Petrographic Investigations." Many volcanic rocks were found on the mainland (Kaiser Wilhelm II. Land). The Gaussberg is, in fact, a strato-volcano, and not a mountain built up by a single genetic process.

Dr. Meinardus, the successor of the late Dr. Enzensperger (who died on Kerguelen Island), in the preparation of the meteorological results, spoke on the "Wind Conditions at the Winter Station of the *Gauss*." Entirely different from the observations of the other expeditions (the *Belgica*, the *Southern Cross*, and Swedish parties, for example), those taken at the *Gauss's* station were remarkably uniform and unchanging. East winds predominated both in persistency and strength. North winds were notably rare. Winds of a cyclonic character apparently originate over the oceanic expanse to the north, and are not föhn winds, as was at first conjectured. The uniformity of the winds suggests the probability that there may be a regular and somewhat easterly subsidence of the inland ice.

A report was presented, in conclusion, on the work of the Expedition in the field of terrestrial magnetism. The great need for further investigations in this branch of physical science was, in fact, the impelling motive for the renewal of Antarctic research, and it was on this line that Neumayer carried out the tireless agitation for which we are indebted to him. Dr. Luyken, who was stationed at Kerguelen Island, reported on the magnetic observations there, which were to serve as a basis for similar work at the winter station of the *Gauss*. The records indicate quiet conditions for the most part, while the greater disturbances (very few in number) appear to have intimate relations with seismic and volcanic phenomena.

Some remarks by Dr. Bidlingmaier, the magnetic observer of the Expedition, were particularly interesting. Attention to terrestrial magnetism has unfortunately declined since the day of Gauss. We do not yet understand the rôle which this physical force plays in our globe; and nothing is more important for the advancement of our knowledge of the earth than a solution of the problem of the secular

variation of terrestrial magnetism. As science proceeds in its search for the equivalent of the energy consumed in this secular variation, it may find the connection between this and other branches of geophysics, and begin to learn the nature of terrestrial magnetism.

If such progress as this is possible only in the distant future, because sufficient data have not yet been collected, some immediate results, according to Dr. Bidlingmaier, are possible by carrying out a complete magnetic survey of the earth's surface, by water and land, in the inexpensive way in which Gauss acquired a conception of the potentials of terrestrial magnetism; but this proposed survey would have a double product—the results from the sea on the oceanic, and those from the land on the continental potential. By means of the comparative study of both these potentials we may gain an insight into the properties of terrestrial magnetism as related to that part of the earth between the mean sea depths and the mean elevation of the land surface.

The first session of the Congress gave the members a very agreeable impression of the scientific results of the German South Polar Expedition; and the full account will be looked for with great interest.

The second session (Tuesday afternoon) was devoted to school geography. Headmaster Heinrich Fischer, of Berlin, presented a paper on the work done by the permanent Commission of Geographical Instruction. Through the efforts of the Commission, the Royal Prussian Land Survey will in future sell the large-scale topographic maps to the higher schools at a reduced price. Unfortunately, some present tendencies in education—as, for example, the "Reform Gymnasium"—are not favourable to the teaching of geography. The next three lectures illustrated methods of geography teaching, and dealt with more extended application of mathematical geography in the school course, and especially with the necessity for the introduction of geological studies.

The third session (Wednesday morning) was devoted to Vulcanology. Professor Dr. Sapper, of Tübingen, spoke on "Results of the Latest Researches Concerning Volcanic Eruptions in Central America and the West Indies in 1902 and 1903." This lecture was beautifully illustrated.

Dr. Max Friederichsen, of Göttingen, spoke in high terms of the work of the late Alphons Stübel, the German vulcanologist. His expedition with W. Reiss to South America was made in 1868-1877. The two explorers devoted a year and a half to the volcanoes of Colombia, and four years to those of Ecuador. In Stübel's work,

the "Volcanic Mountains of Ecuador," his famous theory of volcanoes was mentioned for the first time; and this theory is universally accepted to-day in its essential features, particularly so as to "peripheral craters." More disputable points are Stübel's view that the magma itself is the seat of volcanic force, his total rejection of the theory of the connection of volcanoes with the formation of fissures, and his neglect of the factor of erosion in his treatment of the forms of volcanoes—an omission that has often been criticised.

Professor Hans Mayer, of Leipzig, the well-known explorer of Kilimanjaro, endorsed what had been said in praise and in criticism of Stübel's work. Nevertheless, no later explorer of volcanoes had even approximately made so valuable an exposition of the theories relating to volcanoes as that of Stübel. A series of interesting drawings by Stübel, now in the Grassi Museum, Leipzig, was shown.

In conclusion, Dr. Hundhausen, of Zürich, exhibited lantern-slides of many volcanoes in the Red Sea, Java, New Zealand, and Hawaii.

The fourth session had for its topic: "The Morphology of Coasts and the Formation of Dunes." The alluvial formations on the German Baltic coast were first discussed; then Dr. Solger, of Berlin, gave an interesting address "On Fossil Dune Forms on the North German Plain." Dr. Solger showed a series of inland dunes having bow-shaped outlines, the convex sides of which are turned towards the east. He holds that these bow-shaped dunes are the result of the predominance of easterly winds. These easterly winds, according to Dr. Solger's view, were most prevalent in the "diluvial" period, because anticyclonic conditions must have existed over the inland ice of that age; and on account of their "diluvial" origin, Dr. Solger calls them "fossil dunes."

The fifth session was devoted to the "Geography of West Prussia." The great hospitality of the Danzig people and the admirable excursions and entertainments prepared by the Committee of Arrangements added largely to the pleasure and success of the Congress. We refer particularly to the three-day excursion down the Vistula, from the Russian frontier to the sea, which had many interesting features from the morphological, cultural, and historical points of view. A pamphlet prepared for the occasion and an exhibition contributed to further knowledge of West Prussian geography.

All the visitors will look back to the Danzig meeting of the Geographical Congress with the greatest pleasure. The number in attendance was about 320. The next Congress will be held at Nuremberg in 1907.

THE RAILWAY IN NEWFOUNDLAND.

BY

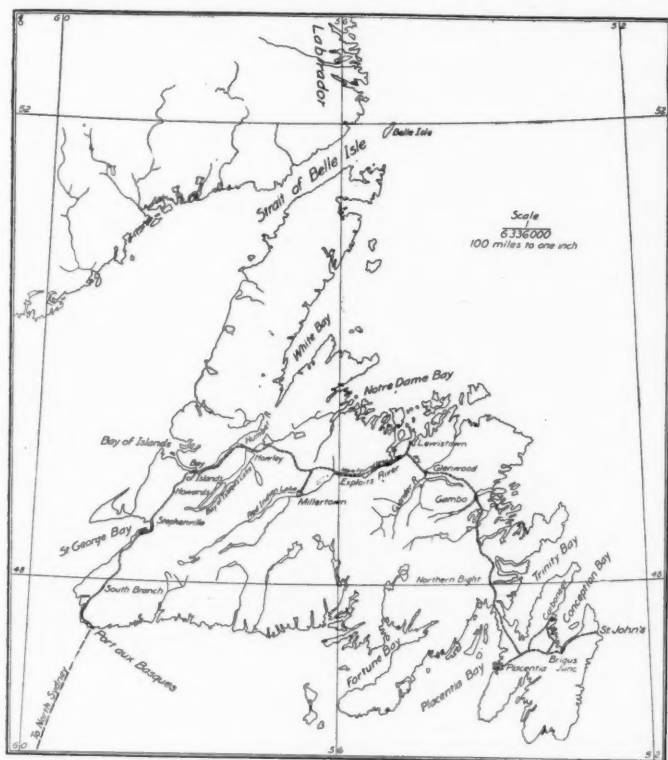
CHARLES M. SKINNER.

Civilized man must breathe uncivilized air and touch uncivilized earth now and again, or pass into the decadence inevitable to men and nations that refuse the healing of nature. Consciousness of this fact and the distress of city living are widening the playgrounds of the earth, and the agencies for reaching them multiply faster than they like who prefer to hold some lands unspoiled. One of the most interesting yet least known of these districts is Newfoundland, that blocks St. Lawrence Gulf, with an area commensurate with that of Ireland and Wales, or of Ohio, and a population of 217,000.

A factor in the future development of this island is the railway, opened a couple of years ago, and now showing a trackage of 638 miles, narrow gauge, yet supplied with most of the comforts expected by travellers, and operating a "sleeper" and "diner" on each first-class train that plies across the island in twenty-eight hours, three times a week, in each direction. The fortunes of this enterprise are still in abeyance, for, built at the instance of Government, it has reverted to the contractor, Mr. R. G. Reid, that he may be reimbursed for the work—a proceeding that has created much discontent. Mr. Reid has released back to the Government, however, the 2,000 miles of telegraph and 3,000,000 of the 5,000,000 acres granted to him, and is seeking Government sanction to sell or lease the road to a corporation. With the solution of the question of ownership and the settlement of the long misunderstanding with France about the fishing rights on the west shore, Newfoundland will compose itself.

Starting at the southwest corner of the island and aiming toward St. John's at its southeastern corner, the railroad makes a wide curve to the northward, describing in 548 miles what might have been covered in 350. Apart from the roughness of the coastal strip and the number of bays, coves, and ravines that could be crossed or looped only at much expense for bridges, there are reasons for this seeming errancy. The bend of the road opens a great forest section; it gives access to hunting and fishing districts; it serves the more important towns; and, mainly, it provides for settlement where it is most likely to be established when Newfoundland enlarges and varies its industries, which are now represented almost solely in fishing. At present only

the coast is inhabited. For a hundred miles at a stretch the train does not cross a road, and, excepting for a water tank or cabin of a section hand, the traveller sees no token of human occupancy save—the pity of it!—vast tracts of burned woodland, gray, ghostly, silent; millions of money wasted, coverts for birds and animals destroyed, the moss charred, the water lowered, miles of fertility made



THE RAILWAY ACROSS NEWFOUNDLAND.

desert. So little is still known of inner Newfoundland that lakes within rifle shot of this railroad are still mapped as conjectural, rivers are undefined by the surveyor, and mountains are named only because they show from a distance. The explorer who gets in his work before or after the flies and mosquitoes do theirs has interesting things to tell us. The great north arm of the island, 150 miles long

and 40 miles wide, is an inviting region, for within its coast-line practically nothing is known of it.* Yet there are no greater difficulties in travel here than in Quebec. The fogs that hang about the shores seldom drift inland or obscure the landscape for more than a few hours.

Newfoundland rises suddenly from the sea on the south in cliffs 1,800 feet high, which are whitened with snow till July. The plateau which they edge extends northwardly in broken ridges, and these hills, with the interlocking river systems and lake chains that fall into the valleys, follow a general direction of southwest to northeast. By interlocking, I mean to define that curious alternation of north and south-flowing streams that is characteristic of this country. It is beside these waters and along these valleys that population will spread when development arrives. Of the 40,200 square miles comprised in the island, only 135 are cultivated. As a native informed me, "We raises our own pattateys, and cabbidges, and turmits," and there are oats and barley, and some small fruits, the half-dozen starved-looking apple trees near St. John's promising no success with the larger ones. Grass grows richly where it has the chance, and it should be a good investment in a part of the world where hay sells as high as \$20 a ton, and in the sheltered vales grazing ought to be profitable. If the railroad merely stimulated the dairy interests, it would not have been created in vain.

The stranger begins his journey across Newfoundland at Port aux Basques, reached in a night's journey from North Sydney, Cape Breton. For the first 70 miles he runs between the sea, visible across a sandy, windswept reach, and the backbone of the island, the Long Range, dark, half-timbered, flat-topped, pierced by recesses where last winter's drifts dissolve and cascade turbulently to the sea. Habitations are few and poor, mere shelters often, with hardly an attempt at the "pattateys and cabbidges"; but the timber, storm-bent and stunted, heightens as we turn inland, till, at the lovely Bay of Islands, with its environing domes 2,000 feet in altitude, we are reminded of the forests of the Adirondacks. The land, too, is in better heart, as we see from the gardens, the bits of lawn about the cottages, and the flowers of which Newfoundland has no lack, the glowing thickets of "gold-widow," the white knots of Labrador tea, the blue sceptres of the iris, the nodding pouches of the lady's slipper, the dull red

* *The Geographical Journal* for August, 1905, has a paper by Mr. H. C. Thomson describing a six-weeks' journey made with Mr. W. H. Burt through this region in 1904. A map of the route is given.

In the same periodical for October (p. 468) Mr. G. D. McGrigor claims to have discovered camping-grounds of the Beothiks on the shores of Red Indian Lake.

disks of the pitcher plant, the big-leaved "hemlock," flowering white, the daisy, dandelion, and chamomile deserving mention. Never have I seen such a blaze of gold as the buttercups make about St. John's in midsummer, nor finer lilacs than bloom there in that season. The notes of our common birds are heard, and there are no snakes.

With little lift of grade, and following the considerable stream known as Harry's Brook, we strike the Humber, one of the rivers that so nearly split Newfoundland into an archipelago, for if it were sunk a few yards deeper into the sea it would be nine islands instead of one, all with the northeast-southwest axis. The Humber, broad in



THE HUMBER RIVER, NEWFOUNDLAND.

its lower reaches, narrows till we find its black torrent pouring westward through a gorge with tawny precipices overhanging a thousand feet above. We cross its tributary, Grand Lake, 56 miles long, at its foot, and then begins the climb toward the great barrens that roof the island and are feeding-grounds for caribou, which hunters are slaughtering by thousands, and which, like the human aborigines, the Beothuks, are doomed to extermination. The forest we are leaving, and that clothes much of the lower country, is of spruce, pine, fir, and tamarack; but there are fine specimens of birch, some maple, and the deep tangles of elder and various shrubs and field growths of

our own country betoken fertility whenever the land shall be claimed for agriculture or for ranching. The wood thins presently, discovering what might be taken for clearings; these spaces widen to fields; and at the fall of night we rise into the vast, cold solitudes where granite *tolts*, or peaks, crouch along the distance, lifting their heads toward the sunset; then the scene fades with an impression of immensity and the northern lights begin to dance.

These barrens are as impressive as the western plains, and resemble them at first glance; yet they differ, except in superficialities. The plains are dry; the barrens soggy, and threaded by a thousand rills. The plains are stony and dusty; the barrens, the boulders strewn here and there, are deceptively like pasture. The "moss," as they are also called, is a thick carpet, the woody stems of Indian tea and "goold-widdy" forming a warp, and grass, reeds, and reindeer-moss the woof. This carpet has been thickening for centuries, and although the surface appears dry and invites to rambles, you sink in it to the ankles, and sometimes to the knees. I am told that in a few places it is six feet deep. It holds the moisture which is visited on the island in rains and fogs, and it collects in unseen hollows where a surface growth of blue flag denotes its presence. One needs rubber boots in exploring the barrens, and he finds advantage in following the elk tracks, which avoid many pitfalls that the moss conceals. Yet there is little danger from swamp or quicksand.

The crest of the island, near its centre, is marked by a series of *tolts*, of which the *Topsails* and *Hodges* (2,200 feet) are conspicuous from the railroad, and, in crossing the divide at a height of 1,800 feet or so, one is apt to see white drifts beside the track, in the shadow of the snow fences, as late as July. For, although the cold is less intense than on our Western ranges, snow falls heavily in winter and traffic is stopped for weeks at a time. Gruesome tales are told of the sufferings of passengers when stalled fifty miles from a settlement.

At *Dawe*, which needs a microscope to discover it as a town, we reach the *Exploits River*, pouring from its sources in the *Annieopsquolch Mountains*, with many leaps and much chafing of its hilly shores, toward a bay filled with islands. We follow 40 of the 200 miles of this largest of the Newfoundland streams through wilderness, still unpeopled, then over a brief rise to the valley of the *Gander*, the streams of this country being often separated by the thinnest of partitions. And descending to these large, calm reaches, which are in marked contrast to the romantic cañon of the *Humber*, we still find the land clothed with primeval forest; but the hum of the saw-mill is heard in the land, and a tract half as large as New Jersey

will be deforested if the Harmsworth pulp concession becomes effective, to the detriment of the soil and springs—a circumstance overlooked by the people in their hope of gain from the industrial development. There is hardly a break in the wilderness between the east coast and the west for agricultural or grazing purposes, and few present occasions for an interior village, except at the granite quarry



THE VALLEY OF THE LITTLE CODROY, NEWFOUNDLAND.

near the Topsails. Nor need we look for an immediate settlement if the fisheries continue to prosper. They engage nearly a third of all the Newfoundlanders and represent almost the adult male population; still, there are 2,500 farmers, with an average of 34 acres apiece, and they raise cattle, sheep, hogs, and poultry; so that the agricultural idea is implanted, and some day there will be withdrawal

from the bleak, rough coast, with its icy besetment, and devotion to less heroic toil than the pursuit of cod and whales. Here along the Gander, with its fertile alluvium, is room for a million homes.

Crossing Terra Nova River, paralleling the east coast at a height along the hillsides and threatening the isthmus that unites Wales-like Avalon to the rest of the island, the settlements increase in size and number, and remarkable grades and loops are seen in circumventing the incisions which the ocean has made in the land. Not a little of this railroad work has a temporary look; the embankments are too steep, the shelves beside the river too narrow; the bends by which rocks and coves are avoided are too wide; indeed, the bed of the road is laid so rudely that sensitive passengers may experience sea-sickness. Not till we come to Avalon and run the last 80 miles of the trip do we feel ourselves allied to civilization once more, for houses appear in the landscape, property is fenced, and villages are discovered afar by the spires of their churches—Roman, Episcopal, and Methodist, which represent the faith of the colony. Roads, not ill built, wind across the stony hills and through woods of pine. Rarely a house gives token of having been built for more than mere expediency, yet there are few homes in Newfoundland that have the size and architectural importance of our ordinary suburban villas. Conformable to the featureless houses are the railroad stations, where each village assembles to stare at the passengers, but less rudely than in our own "depos." Indeed, one likes these people for a hearty, healthy, kindly race, poor, ignorant of books, but truthful, trustful, and unspoiled.

Where capital would have directed the cutting or tunnelling of a hill, the railroad zigzags over its top or detours about its flank, and miles will yet be saved through engineering economies; but the building of spurs, of which there are now but four, with a total of 90 miles, will wait the development of resources and the increase of the shore hamlets to towns. St. John's is the only city, and to that the train brings us, landing us at the head of its fjord amid a dubious odour of sewage and a dull outlook on wooden houses, but a picturesque, hospitable, restful place withal. Though in the latitude of Berne, Budapest, and Seattle, it is occasionally blocked by icebergs and flocs that the Arctic current lodges at its gates.

Newfoundland invites the tourist because of its air, ocean-purified, ice-cooled; its moderate temperatures, seldom falling below zero or reaching 90°, though the winters are dreaded for their snows and winds; its remarkable scenery, for besides its hills, woods, ravines, caves, and barrens, its sea-wall has been carved by the elements into

a thousand impressive and fantastic shapes, while the icebergs add wonderful forms and colour; and, lastly, because of its restful isolation and simplicity. It invites the hunter and the fisherman but too loudly, for a terrible waste has been committed; yet the elk still haunt the barrens, and the bear and fox the woods, while the streams abound in trout and salmon. It invites the artist, who will discover in the villages nestling in the coves quaint forms in building, and hardly yet sometimes beautiful types of men and women. It invites the geologist and prospector, inasmuch as copper, iron, and some rarer metals are found in paying quantities—gold in amounts that warrant hope of more, coal in seams too shallow for profit yet promising relationship to the great beds of Cape Breton, and fossils and minerals of scientific interest, while the glacial erosions—the great folds, fractures, and intrusions in the rock foundations—deserve study.

But Newfoundland invites more than the visitor; it invites the settler. England's oldest colony is in touch with our markets; its port, the eastmost in North America, is three and one half days from Europe; its woods await the scientific forester; its mines the pick; its fields the plough; its rivers the harness of the manufacturer, miller, and power-maker. The climate is healthy; there is room to grow, and land is practically given away. Pioneer work is to be done for popular education and for internal improvements before the American ideal is reached, and when that occurs the charm of this out-of-the-world place may be dispelled. Yet in the westward set of immigration its development is inevitable, and in the changes that impend the social and industrial dynamic of the railroad must be considered.

GEOGRAPHICAL RECORD.

AFRICA.

OSTRICHES IN THE OUDTSHOORN DISTRICT OF CAPE COLONY.—This district of the Cape of Good Hope is girdled with mountains, and so difficult of access that there seemed to be little hope of raising bulky farm products for exterior markets. Its prosperity is a good illustration of adapting human activities to natural conditions. The *Agricultural Journal* of the Cape of Good Hope (Sept., 1905) says that the wealth of the district (which is a little north of Mossel Bay) in soil and water is very great, and that nothing was lacking but cheap transportation. With the development of irrigation it was found that lucerne (alfalfa), the king of fodder plants, grew finely wherever water was procurable; but the cultivation of

this grass would not have reached its great extent if it had not been for the ostrich-feather industry, which has grown to enormous proportions throughout the district. Ostriches thrive on alfalfa.

Until recently the only way to get produce out of the district was by ox wagon over the mountain passes, which made it impossible to establish dairy or other agricultural industries on a large scale. The advantage of the ostrich industry is that the whole crop of feathers from an extensive farm may be carried out in a Cape cart, so that the question of transport does not affect the industry very much. The birds not only thrive on the rich pasturage, but the quality of the feathers is superior. A line of railroad has now been carried into the district; and it is expected that in time not a few of the large ranches, where only flocks of these huge birds are now seen, will produce herds of dairy stock and flocks of sheep.

COMMANDANT LEMAIRE RETURNS FROM AFRICA.—This well-known explorer, who rendered much service to African geography about five years ago by fixing astronomically the positions of a large number of places in the south and south-eastern part of the Congo Free State (BULLETIN, 1901, p. 180), has rendered similar service in the northeastern part of the Congo Basin, and has returned to Belgium after three years' absence. In addition to his official negotiations with the Government of the Anglo-Egyptian Sudan concerning Lado, he collected a very large amount of meteorological, hypsometrical, and botanical data, surveyed an area not less than 4,000 square kilometers in extent, and determined the astronomical positions of 135 places.

TELEGRAPH ON THE CONGO.—Our monthly *Consular and Trade Reports* (Aug., 1905) say that communication by telegraph and telephone has been largely developed along the Congo River within the past ten years. The first telegraph line was established between Boma and Matadi, forty miles, in July, 1895. In September, 1898, communications both by telegraph and telephone were completed between Matadi, the highest point reached by European steamers on the lower Congo, and Leopoldville on Stanley Pool, from which about 100 steamers are plying on the 7,000 miles of navigable waterways on the upper Congo. In 1899 there were 800 miles of wire in use. Since then the long-distance telephone has been perfected, and communications are practicable for distances of about 400 miles. Successful experiments have recently been made with wireless telegraphy.

A TELEGRAPH LINE ACROSS THE SAHARA.—Through the efforts of Mr. Jonnard, Governor-General of Algeria, and the French Ministries of the Interior and the Colonies, an enterprise is now under way which will result in a telegraph line across the Sahara. The *Annales de Géographie* (No. 76) says that Mr. Etiennot, the Inspector-General of the Postal and Telegraphic Services of Algeria, is now selecting a route for the line between Beni-Abbès, to which the Algerian telegraph service has just been extended, and Adrar, in the oasis of Tuat. South of Tuat the line will be extended to the Ahaggar Mountains, in the central part of the desert, from which point it will be carried southwest to Timbuktu near the Niger. The *Bulletin Trimestriel* of the Geographical and Archæological Society of Oran says that the preliminary studies will be completed this fall, and the work of building the line will begin next winter.

COPPER IN KATANGA.—Mr. H. Büttgenbach publishes in the *Annales* of the Belgian Geological Society (Vol. XXXI) a paper on the copper of the Katanga

province in the southeast part of the Congo Free State, where he took part for eighteen months in the work of prospecting. He says the ore deposits are distributed in great quantity over a territory of about 80,000 square kilometers in the basins of the upper Lualaba and the Lufira Rivers. This copper region was first visited by Reichard in 1885, and was studied more closely by Cornet in 1894, and a large amount of research work has been done there since 1900. The region is composed of old sedimentary rocks (sandstone, quartzite clays, conglomerate, and limestone) which, in the ore-producing zone, appear to belong to the upper Devonian and probably also to the Carboniferous. The ore deposits, as far as they have been worked out, are the results of the impregnation of some of the strata with copper salts, especially malachite. The ore runs about 14 per cent. copper. Usually there is only a trace of gold or silver, but in some cases a ton of ore yields 3 grams of gold and 72 grams of silver. As exploration has not yet extended below a depth of 40 meters, it is not known how deep mining may be carried. The paper is devoted chiefly to a description of some of the more important and typical deposits. Reports in the *Mouvement Géographique* for two years past have encouraged the expectation that this copper region may take its place among the great producers of that metal.

RESULTS OF THE SEGONZAC EXPEDITION IN MOROCCO.—The BULLETIN recorded in the May number (p. 291) the return of the Marquis de Segonzac to Morocco and his capture by Berbers in the southwest part of the country. The *Bulletin* of the "Comité de l'Afrique Française" reports the release of the French explorer, who was able to save his notes and most of his collections, and has returned to France with his companions, Messrs. Gentil and de Flotte Roquevaire. He desired in particular to study the two slopes of the central main range of the Atlas, the connections between this and the middle and Anti-Atlas, and the economic resources and inhabitants of those regions. He went to the headwaters of the Dra, covered a considerable extent of country, and has brought back scientific observations of all kinds. Mr. Gentil studied the geology and topography of the western part of the Main Atlas and the coast region south of Mogador. During his passage of the Main Atlas he discovered the first fossils by which it will be possible to determine the age of the ancient axis of the range in these parts. On the southern slope he found the remains of a carboniferous fauna, and discovered that the granite base of Jebel Sirwa supports well-preserved remains of volcanoes, apparently of Tertiary age. Mr. de Flotte Roquevaire triangulated the Huz and the western part of the Atlas, taking bearings from 66 stations and fixing the co-ordinates of about 300 positions. This work will be most helpful in the future mapping of that region.

THE GIANT GORILLA OF THE SANGA.—*La Nature* recently printed the photograph of an enormous anthropoid ape that was killed near the Sanga River, in the French Congo. Dr. E. T. Hamy writes that these large animals have been seen several times in the past year among the valleys of the Lôm and Sanga Rivers. The white men at the German and French stations corroborate this report that an anthropoid of great size lives in the forests along the boundary between the Cameroons and the French Congo.

Mr. Eugène Brussaens, who sent the photograph to *La Nature*, says that the animal appears to be a gorilla, differing from those living in Gaboon only in its enormous stature. Its skull, face, and ears are exactly like those of the gorilla. The specimen that was killed was not less than seven and one half feet in height,

and its body in a sitting position was as high as an ordinary Pahuin native. It was killed near Uessu, the chief station on the River Sanga, and was one of three animals living in the neighbouring forest and which had become known by their large footprints on the ground.

The animal was almost bare upon the breast and stomach, but its shoulders and thighs were covered with thick, long hair. It was about three feet and a half in breadth across the shoulders, it weighed nearly 800 pounds, and eight porters were required to bring it to the station. Mr. Dupont, the Administrator at Uessu, intends to send the skeleton of this unique specimen to Paris. If it is not a new species it is believed to be a new variety of the gorilla. A later report says that another similar specimen has been killed near Bayanza on the Sappa.

AMERICA.

UNITED STATES RAILROADS IN 1904.—The statistics of railroads compiled by the Interstate Commerce Commission for the year ending June 30, 1904, show a total single-track railroad mileage in the United States of 213,904 miles—an increase of 5,927 miles over the previous year. This increase exceeds that of any year since 1890. The aggregate length of track of all kinds was 297,073 miles. There were in service 46,743 locomotives, classified as passenger, 11,252; freight, 27,029; switching, 7,610. The total number of cars was 1,798,561—an increase of 45,172 over 1903. This rolling stock was classified as passenger, 39,752 cars; freight, 1,692,194; cars employed by railroads in their own service, as gravel cars, etc., 66,615. The number of passengers carried was 715,419,682. The number of tons of freight was 1,309,899,165. The average revenue per passenger was 2.006 cents, the average for the preceding year being the same. The average revenue per ton per mile was 0.780 cent. This average for the preceding year was 0.763 cent.

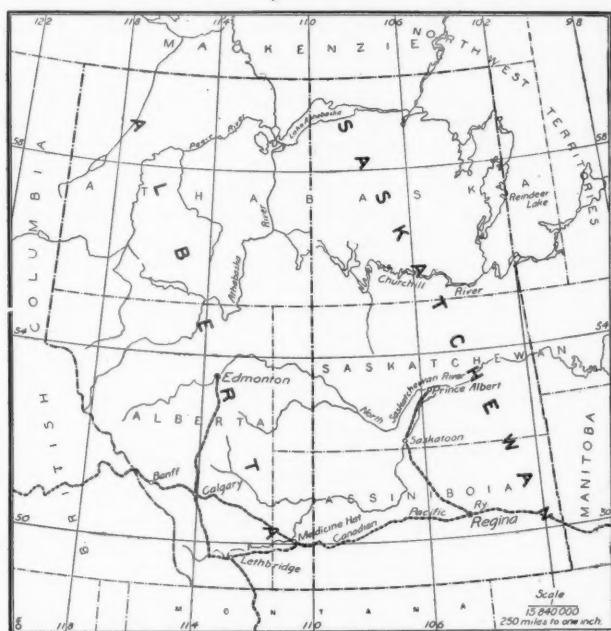
ROAD RED BOOK OF NEW YORK STATE FOR 1905.—This is a timely publication, particularly in view of the amendment to the New York State Constitution at the last election authorizing the State to incur debt for the improvement of highways. The book contains directions for the guidance of highway commissioners in towns that have adopted the money system of working roads, and are thus able to avail themselves of the assistance of the State in the improvement and maintenance of their common highways. It also describes the best methods of making and improving roads, and has many half-tone pictures showing good and poor roads in New York State, and various methods of making them and keeping them in repair. It is *Bulletin* No. 10 issued by the Department of the State Engineer and Surveyor.

TWO NEW PROVINCES IN THE DOMINION OF CANADA.—The provinces of Alberta and Saskatchewan were admitted into the Dominion on Sept. 1 last. As is shown by our map giving their boundaries, the new provinces include the former territories of Alberta, Assiniboia, Saskatchewan, and Athabasca. The entire area is bounded on the south by the international frontier; on the east by Manitoba and the 102nd meridian; on the west by British Columbia, the line in the south coinciding with the Great Divide of the Rocky Mountains; and on the north by the 60th parallel, which is also the northern boundary of British Columbia. The 110th meridian was selected as the dividing line between the new provinces, so that Alberta comprises the former territory of Alberta, the western half of Athabasca, and a narrow strip of Saskatchewan and Assiniboia; while Saskatchewan comprises the eastern half of Athabasca and the greater part of the former territories of Assiniboia and

Saskatchewan. Edmonton has been selected as the provisional capital of Alberta in preference to Calgary, and Regina will be the capital of Saskatchewan.

The two provinces comprise a total area of 550,000 square miles, and the population of each is roughly estimated at 250,000. A long-standing request of Manitoba for extension westwards was refused.

The public or Crown lands in the new provinces are to remain in the possession of the Dominion, financial compensation being given for them, to be increased as the population increases. Sir Wilfrid Laurier justified this treatment of the lands by the suggestion that the Government's immigration policy might suffer if it lost control of the unsettled land. The provinces will accordingly receive at once from



CANADA'S TWO NEW PROVINCES.

the Dominion an annual subsidy of upwards of \$1,300,000, and this will be increased with the increase of population and land values by a further annual payment of about \$650,000.

Pending further legislation, as the Society is informed by Mr. James White, Geographer of the Department of the Interior, the old territorial divisions of Franklin, Mackenzie, Keewatin, and Ungava have been done away with, and these parts of the Dominion are all now included in the North West Territories.

MINERAL PRODUCTS OF BRITISH COLUMBIA FOR 1904.—According to the annual Report (1904) of the Minister of Mines for British Columbia, the mineral output of that year was valued at \$18,977,359—a figure that had been exceeded only in

1901. The yield of placer gold was \$1,115,300; lode gold, \$4,589,508; and coal and coke, \$1,253,628. The total mineral production of the province from its settlement in 1852 to the end of 1904 was \$226,201,851, gold supplying nearly one-half of this value and coal and coke over one-third. British Columbia contributes half of the value of mineral output of the country. The report contains details of mining operations in the various districts and a considerable number of half-tone pictures showing mining camps, placer, and other kinds of mining and quarries.

THE MEXICAN FREE ZONE ABOLISHED.—This zone, which was established in 1851 by Mexico along her northern frontier, was abolished on July 1. The Free Zone was briefly described in the *BULLETIN* for May, p. 288. It was established, as President Diaz says in his proclamation, on account of the isolated condition of Mexicans along the northern frontier, to whom domestic commodities could not be sent cheaply because transportation was difficult and expensive. Commodities from the United States were therefore permitted to be imported practically free of duty, so that the inhabitants of the Free Zone might buy the necessities of life cheaply and be encouraged to establish industries by procuring raw materials at moderate cost. The various lines of railroad now make it easy to send domestic goods to frontier points, and for this and other reasons the need for the Free Zone no longer exists.

THE U. S. Board on Geographic Names rendered the following decisions October 4, 1905:

CAT: island in the St. Lawrence River, St. Lawrence county, N. Y. (Not Chat, Isle aux Chats, nor Macks.)

* CONNERS: creek, Wayne county, Mich. (Not Conner, Conner's, Connor's, Connors, nor Tremble's.)

CONNERS CREEK: post office and village, Wayne county, Mich. (Not Conner's Creek, nor Connors Creek.)

CRYSLER: island in the St. Lawrence River, St. Lawrence county, N. Y. (Not Chrisler, Dark, nor Lawrence.)

LEMITAR: post office, precinct, railroad station, and town, Socorro county, N. Mex. (Not Lamitar, Lamitas, nor Limitar.)

* MARIANAS: islands in the Pacific Ocean. (Not Ladrone, Ladrone's, Mariana, nor Marianne.)

MINNECHAUG: mountain, Hartford county, Conn. (Not Minnechug, nor Minnehaush.)

* SHANTUNG: province, China. (Not Shan-tung, nor Shangtung.)

ASIA.

A NEW PROVINCE IN INDIA.—The Indian Government adopted a resolution at Simla on July 19 by which Bengal was relieved of an area containing 24,000,000 people, or nearly a third of its population. This step was taken to reduce the size of the province in order to admit of more efficient supervision over its growing population. It was decided to cut off the whole of Eastern Bengal, including, besides Dacca and Chittagong, the districts of Rajshahi, Dinajpur, Jalpaiguri, Malda and Chittagong, and to unite it with Assam, as a lieutenant-governorship under the name of "Eastern Bengal and Assam." The area of the new province is 106,540 square miles, with a population of 31,000,000. The capital will be Dacca, with subsidiary headquarters at Chittagong. The typical Mohammedan

* Reversal of former decision.

population of Bengal will be concentrated in a single province, and nearly the whole of the tea industry and most of the jute-producing region are brought under a single Government.

PARA RUBBER IN ASIA.—Agricultural interest in the Federated Malay States is almost wholly centred in the cultivation of the Para rubber tree. The tree is suited to the conditions found there, and its cultivation is proving remunerative. The exports for 1904 amounted to 14,000 pounds, valued at over \$28,000. This amount will be greatly exceeded in the near future. It has been found that "Plantation Para" is higher-grade rubber than the wild product.—(Condensed from Board of Trade *Journal*, No. 461.)

DR. WORKMAN'S VIEWS ON HIGH MOUNTAINEERING.—The *Alpine Journal* for August contains a paper by Dr. William Hunter Workman on "Some Obstacles to Himalayan Mountaineering and the History of a Record Ascent," which was read before the Alpine Club on May 16th last. It will be remembered that Dr. Workman ascended to a height of 23,394 feet on Pyramid Peak, which is 24,500 feet in height. This is the record ascent in mountain-climbing. Dr. Workman said that he did not feel at all sanguine that Mount Everest would be conquered in the near future. He believes it cannot be ascended without means of transport superior to any now obtainable and after prolonged sieges, during which the mountaineers will have to meet and overcome not only the physical obstacles presented by the peak itself, but also those offered by altitude, heat, cold, snow, and wind, which become more accentuated the higher the points attained. One great difficulty is that it is almost impossible to force the coolies, who are needed to carry the camp equipment, up to a sufficiently high point to make the tops of these highest summits of the Himalayas attainable. While ascending Pyramid Peak, Dr. Workman was unable to pitch his final camp higher than 19,358 feet. If he could have camped at 21,000 or 22,000 he would, in all probability, have gained the summit instead of turning back 1,100 feet below it. He and his two white companions might probably have reached the top of this great mountain during that afternoon, for the weather was perfect; but the peak would have been their mausoleum, as they could not have regained camp that night, and a night in the open at that altitude would have meant certain death from cold.

He said that in the rarefied atmosphere a person can breathe more freely while erect than when lying down. In camp at 19,358 feet the whole party was kept awake by lack of breath. They would doze off and then awake with a start, gasping for breath. His conclusion is:

If camps could be established at heights of 23,000 feet to 25,000 feet and above, as they would have to be, sleep might be entirely prevented or interfered with by deficient oxygenation of the blood to such an extent that a party would be incapacitated from this cause alone from going any higher.

EUROPE.

CAVE EXPLORATION IN THE TWENTIETH CENTURY.—The latest number of *Spelunca* (Vol. VI, Part 1), extended to 192 pp., is wholly given to the first part of a work by Mr. E. A. Martel, the well-known cave explorer, entitled "La Spéléologie au XX^e Siècle (Revue et Bibliographie des Recherches souterraines de 1901 à 1905)". The activity in cave exploration at present is illustrated by the fact that a bare summary of the work done since the century opened in France alone fills the entire first part of this work. Part 2 will be given to speleology in foreign countries; Part 3 to speleology as applied to various sciences; and Part 4

to speleology as applied to public hygiene (Eaux d'alimentation). The four Parts will fill Volume VI of *Spelunca* for 1905.

Mr. Martel treats each of the cave regions of France in turn, briefly summarizing the new cave discoveries and fresh explorations in caves already visited. Many of the summaries occupy only a few lines each; the longest, given to Padirac, fills nine pages. Exaggerated statements with regard to dimensions of some caves and other facts relating to them are corrected. For example, it was reported in *Le Monde Moderne* in July, 1904, that the galleries of the Ardèche and the Pont d'Arc had a total length of over seven kilometers, while the scientific measurements made by Mr. Martel and Dr. Raymond, thirteen years ago, show less than half that length. The sources of information relating to each cave are at the end of the paragraph or section devoted to it.

A LOCAL GEOGRAPHICAL PUBLICATION.—The *Mitteilungen des Vereins für Erdkunde zu Halle a. S.*, published by the Thuringia-Saxony Geographical Union, is an excellent example of a publication entirely devoted to the geographical interests of the small territory in which its members chiefly live. It is an annual. The volume for 1905 contains 125 pages and three maps, and is typographically attractive. The five geographical papers, by W. Ule and others, relate entirely to Thuringia and the province of Saxony. Forty-eight books and monographs, all relating to the home region, are concisely reviewed by Dr. A. Kirchoff, W. Ule, and other well-known geographers. The book reviews are followed by summary accounts of the excursions and meetings during the year, and lists of the members and library exchanges. From the appearance and quality of the *Mitteilungen* the inference seems fair that this Geographical Union and its Year Book are beneficial influences in all that relates to geography in their neighbourhood.

RAINFALL ON BEN NEVIS.—The rainfall on Ben Nevis is discussed by Andrew Watt in the *Journal of the Scottish Meteorological Society*, third series, 1905, Nos. 20 and 21. The nineteen-year period, 1885-1903, is considered. The mean annual rainfall at the summit was 160.8 inches, and that at the foot 78.6 inches. In individual years the amounts at the summit varied from 49 per cent. above to 33 per cent. below the mean, and at the base from 45 per cent. above to 23 per cent. below the mean. Rain falls more frequently but less heavily by night than by day at the foot of the mountain, speaking generally. On the summit the variations are less marked, but accord on the whole with those at Fort William. Falls of 4 to 6 inches a day have been recorded at the summit. R. DEC. W.

POLAR.

NEW COASTS SEEN BY THE DUKE OF ORLEANS.—Early in September news was received in Sweden from Reykjavik, Iceland, announcing that the Duke of Orleans and his party in the *Belgica* (BULLETIN, pp. 493-4) had made a successful voyage north along the east coast of Greenland. The point they were said to have attained is $78^{\circ} 16' N.$, which is about 110 statute miles north of Cape Bismarck, the highest point reached by Payer of the Koldewey Expedition in 1870. The party found that Cape Bismarck is not on the mainland but is part of an island, the indentation which the German Expedition named Dove Bay being in fact a strait separating the island from the mainland. The return of the Duke's party to Belgium has confirmed this report and added very interesting details, which are published in *Petermanns Mitteilungen* for September.

It was found that north of Cape Bismarck the coast is little indented, in which respect it differs from most of the explored Greenland coast, which is more or less deeply dissected by fiords. The new-found coast-line was named *Terre de France*. The party was able to land on a cape which was named Cape Philippe ($77^{\circ} 36' N.$, $18^{\circ} 36' W.$). Here they found ruins of Eskimo settlements; and this discovery will strengthen the view that at least a part of the Greenland wanderers travelled around the north end of Greenland and down the east coast.

At the *Belgica's* farthest north a wall of ice covering the sea and from 15 to 20 meters in height made it necessary to turn back. The deep-sea soundings appear to show that there is a submarine ridge between Greenland and Spitzbergen. It was thought probable that such was the case when the *Fram* returned from its oceanic investigations some years ago. The *Belgica* ascertained that at some distance from the Greenland coast the depths rapidly decreased from 470 meters to 58 meters. It is to be hoped that the expedition of the Duke of Orleans will encourage the fitting out of a party to make a thorough survey of the still unknown coast between *Terre de France* and the Independence Bay of Peary.

The Germans of the Koldewey Expedition reached Cape Bismarck by a difficult sledge journey in 1870. At that point, in about $76^{\circ} 40' N.$, they were compelled to turn back on account of the failure of their supplies. It is not surprising that the Germans failed to recognize Cape Bismarck as part of an island, for in the account of the journey written by Payer he says that when they climbed to the top of Cape Bismarck a violent snowstorm prevailed, "which effectually prevented any great geographical acquisition."

IMMIGRATION OF THE ESKIMOS INTO GREENLAND.—Mr. H. P. Steensby summarizes in *Petermanns Mitteilungen* for August (pp. 186-187) the conclusions reached by Mr. Schultz-Lorentzen with regard to the immigration of the Eskimos into Greenland (*Eskimoernes Indvandring i Grönland. Meddelelser om Grönland*, No 26. Copenhagen, 1904). The stream of immigration from Bering Strait has been traced by the ruins of huts, graves, weapons, etc., from one island to another across the Arctic archipelago, north of our continent, to the narrow channels leading north from Smith Sound. This is undoubtedly the region where they crossed to Greenland. By what routes were they distributed along the east and west coasts?

Mr. Schultz-Lorentzen has deduced the theory, from what is now known of the natives and their abandoned dwelling-places, that the west coast Eskimos living south of Godthaab reached that region by way of the north and east coasts; and that the west coast natives living north of Godthaab, in Danish Greenland, reached their present habitat by sledging or boating south along the west coast.

As relates to their languages he points out that the Eskimos of Danish West Greenland may be divided into a northern and a southern group. The northern dialect, which is spoken north of Godthaab, makes predominant use of the vowels "u" and "o," and is designated as the "u" dialect. The southern dialect, spoken south of Godthaab, is called the "i" dialect, because the vowels "i" and "e" largely take the place of the vowels "u" and "o" in the northern dialect. It is found, also, that the east coast natives at Angmagsalik speak the "i" dialect.

These east coast natives and the west coast Eskimos south of Godthaab build partitions on their sleeping platforms, make the same shapes of boat frames, dress skins, and fashion their weapons and implements in the same manner, throw their dead into the sea, and in other ways resemble one another, while differing from the natives of Danish Greenland north of Godthaab. These are the most impor-

tant facts upon which he bases his theory as to the migration of the Eskimos after they reached Greenland.

This question can be settled only by the exploration of the still unknown north-east coast. Mr. L. M. Erichsen is said to be pushing his project for returning to the Smith Sound natives on the west coast and crossing the inland ice with a party of them for the purpose of exploring the unknown coast-line between Cape Bismarck and Independence Bay (BULLETIN, p. 554, Sept., 1905). If he succeeds in raising the necessary funds, he intends to make a thorough search of the coast of northeast Greenland for Eskimo remains. Should he find them, the migration of the natives around north Greenland to the east coast will doubtless be regarded as established.

THE SNOW HUTS OF THE ESKIMO.—The climatic control of the materials of which human dwellings are constructed has often been emphasized, and the general fact of snow huts in the Arctic, of light construction of leaves and bamboo in the moist tropics, or adobe houses in arid regions, and so on, are well known. The details of construction, however, and the more minute control of climatic conditions, have not, as yet, received adequate attention. For example, in the case of the snow huts of the Eskimo, it appears on the authority of Klutschak, as reported by Woeikof, that these huts, which are arched, are never constructed out of the first snow which falls. The Eskimo waits until successive snow-squalls and high winds have packed the snow down hard. In such cases as this, the density of the snow is not due to the weight of the snow, nor to successive thawings and freezings, as in the case of the formation of a névé, but it is simply the result of packing under wind action.

R. DE C. W.

INTERNATIONAL POLAR ENTERPRISE.—The *Vingtième Siècle*, Brussels, says that at the suggestion of King Leopold the polar explorers Lecoq and Arctowski of the *Belgica* Expedition, Professor Nordenskiöld, and Messrs. Bruce and Shackleton met at the Mons Congress to consider a scheme for international polar expeditions to be submitted to the fifth section of the Congress. It is proposed that these expeditions be organized through the good offices of various Governments, and that an organized effort be made to raise large sums of money for them, and it was said that the Government of Belgium would be active in the organization of such expeditions. Letters were read from leading explorers, including Peary, von Drygalski, Charcot, de Gerlache, and Racovitza, who were unable to attend, but endorsed the project and offered their support. The section of the Congress on Polar Exploration later adopted the resolution in favour of the scheme. It is hoped, if the project is successful, not only to stimulate polar research but also to secure the earlier publication of the scientific results.

SCIENTIFIC WORK OF THE ZIEGLER POLAR EXPEDITION.—Mr. William J. Peters, who accompanied the Ziegler-Fiala Expedition to Franz Josef Land (BULLETIN, Oct., 1905) as scientific observer, has made a short statement of the scientific work. Meteorological observations, begun immediately after leaving Norway in July, 1903, were continued until July 28, 1905, and recorded by the methods of the U. S. Weather Bureau.

Magnetic observations (declination, horizontal intensity, and dip) were made from Oct. 1, 1903, to June 29, 1904, at Teplitz Bay, according to a programme arranged by Dr. L. A. Bauer. This embraced two-minute eye-readings of declination for twenty-four hours on Wednesdays, and for periods of consecutive four

hours on every other day of the week. Horizontal intensity and dip were observed weekly.

Astronomic observations were made with a Repsold circle at Teplitz Bay and Alger Island. Tidal observations were made for eight months; and the exploration and charting of Franz Josef Land were carried on with very satisfactory results in the summers of 1904 and 1905.

PROPOSED EXPLORATIONS WEST OF THE PARRY ARCHIPELAGO.—The Parry Archipelago extends north of our continent between the islands of North Devon and Banks Land. Between the Parry Archipelago and the New Siberia Islands, off the coast of Siberia, there is a stretch of Arctic waters about 1,000 miles in length which has not been explored except along the track of the *Jeannette* drift. Mr. Einar Mikkelsen of Copenhagen has raised a part of the funds necessary to place a small expedition in this region. He hopes, with the help of a geologist and a naturalist, to discover if any islands exist in this long stretch of sea. It is doubtful if he will be able to start before 1907.

Meanwhile a young Englishman, Mr. Alfred H. Harrison, is now supposed to be on his way down the Mackenzie River, and he will try to solve the same problem. The London *Times* says he is an experienced traveller, and has trained himself very thoroughly to carry out the work he has in view on scientific lines. He is bearing the entire expense himself, but carries instruments lent to him by the Royal Geographical Society.

RESULTS OF THE CHARCOT EXPEDITION.—Dr. Jean Charcot has described before the Paris Geographical Society the results of his recent expedition to the Palmer Archipelago and Graham Land, south of South America. *La Géographie* prints a summary of the work done, from which it appears that the entire region around the winter station at Wandel Island was surveyed by triangulation; the outer coast-lines of the islands of the Palmer Archipelago were also surveyed and the work connected with that of the *Belgica* party, so that the coast survey in this region was completed. The Biscoe Islands and parts of the coast of Graham Land were likewise surveyed, and trigonometrical observations were made of various points on Alexander I. Land from a great distance, but sufficiently exact to give an idea of the outline of a part of this promontory. The tides were studied for six months, and the rise was found to be slight, the maximum being about five feet. Meteorological and magnetic observations were numerous, the biological and geological studies were well rewarded, and the collections were important.

THE NORTH POLE BY BALLOON.—Mr. Marcillac, an aeronaut of Paris, is preparing to attempt another invasion of the North Polar regions by balloon. He thinks an airship may be made for him which will be adapted for polar conditions, and that with his improved outfit he may hope to escape the fate that overtook Andrée.

TERRESTRIAL MAGNETISM.

THE MAGNETIC SURVEY OF THE NORTH PACIFIC OCEAN.—Dr. L. A. Bauer, Director of the Department of Terrestrial Magnetism in the Carnegie Institution, has informed the Society of the organization and preliminary work of the expedition which has begun the proposed magnetic survey of the North Pacific. The brig *Galilee* was chartered by the Department, and after having "swung" ship on Aug. 2, 3, and 4, in San Francisco Bay, to determine the effect from the remaining iron on board, she sailed on Aug. 5 for San Diego, reaching that port on Aug.

12. Magnetic data were daily secured under various conditions and with various instruments. Dr. Bauer accompanied the expedition, and *Science* reports that his deflection apparatus for determining horizontal intensity proved successful.

At San Diego the ship was again "swung" for the determination of the deviation co-efficients, some further alterations were made, and the *Galilee* left San Diego on Sept. 1 for Honolulu, arriving there on Sept. 15. She is now working in the region of the Pacific north of the Hawaiian Islands. In accordance with the plans, the *Galilee* is to return to San Francisco by Dec. 1, and will leave early in January for an entire circuit of the North Pacific Ocean if the necessary funds have been provided.

The *Galilee* is a wooden sailing vessel, built in 1891, and was originally in the passenger trade between San Francisco and Tahiti. Her length is 132.5 feet, breadth 33.5 feet, and depth 12.7 feet; net tonnage about 328. To adapt her for the purposes of the magnetic expedition, it was necessary to remove as much of the iron on her as possible, the principal change required being the substitution of the steel rigging by hemp rigging. The cabin space had to be enlarged for the accommodation of the scientific personnel, and a special observing bridge was built to run fore and aft, and to be about 15 feet above the deck, in order to get as far away as possible from the iron in the deck and in the sides of the vessel.

The *Galilee* is at present commanded by Captain J. F. Pratt, of the United States Coast and Geodetic Survey. He is assisted in the scientific work by Dr. J. Hobart Egbert, surgeon in the United States Coast and Geodetic Survey, by Mr. J. P. Ault, magnetic observer of the Institution, and by Mr. P. C. Whitney, magnetic observer and watch officer, also of the Coast and Geodetic Survey. The sailing master is Captain J. T. Hayes, and the crew consists of ten men.

The *Galilee* is the fastest sailer of her size in the Pacific Ocean. She has made a voyage of 3,000 miles from the South Pacific Islands to San Francisco in fifteen days, and has made as much as 308 miles in one day. By special courtesy of the Secretary of Commerce and Labor the *Galilee* has been classed as a yacht, in order to facilitate her passages from port to port.

GENERAL.

CAUSES OF OCEAN CURRENTS.—A paper by Dr. Nansen on this question appeared in the first three numbers of *Petermanns Mitteilungen* for 1905. His views are based upon his experiences during the voyage of the *Fram* and the investigations and laboratory experiments he has made since his return to Europe. He does not share the opinion, advanced by many writers, that ocean currents are caused by the predominating influence of atmospheric currents. As the effect of the earth's rotation brings about a deviation of the ocean currents from the direction of the wind, he believes that this fact vitiates the conclusions of those who hold to the above theory. Except on the equator and in special cases due to the proximity of large land-masses, he holds that it is impossible for a wind to produce a water current that coincides with it in direction.

It is his belief that the potent agent in the production of ocean currents is the difference in temperature between the equator and the poles. Winds, however, while not shaping the courses of currents, may influence to some extent their rate of motion. The main ocean currents, he believes, may be explained as due to influences introduced by the continents in their path. Dr. Nansen's paper is a searching and brilliant exposition of his investigations and deductions, but in so complicated a subject, bristling with disturbing factors, it may be long before a conclusion is reached that will be universally accepted.

THE LIBBEY CIRCLE IN SEISMOLOGY.—In the annual report for 1904 (Part I, p. 44) of the British Association for the Advancement of Science, Prof. Milne refers to the "Libbey Circle" and enters it upon an accompanying earthquake chart. Undoubtedly, Prof. Milne refers to the meeting of that Association in 1902 when Prof. William Libbey, of Princeton, was present and spoke at length upon what Prof. Guyot was in the habit of calling the great zone of fracture about the globe.

This circle is a small circle of the globe having Bering Strait as a centre or pole and a radius of about 80° of arc. It is found that a circle thus drawn cuts through all the depressed lands in the central portion of the globe.

Prof. Guyot often referred to this region as the zone of fracture and one that contained five-sixths of the active volcanoes of the world. It stands in clear contrast with the great circle of volcanoes surrounding the Pacific Basin. It is, in fact, a zone because a great circle will not exactly fit all these depressions, but a zone with slightly irregular borders and with this circle as an approximate median line will do so. Prof. Guyot never referred to this zone as in any way connected with seismological phenomena, but Prof. Libbey spoke of this part of the subject at considerable length, and reported that he had a large amount of as yet unpublished evidence of very great seismic activity within this zone.—(*Monthly Weather Review*, June, 1905.)

HELPS TO EXPLORERS.—Many explorers are familiar with the very valuable work edited by Dr. von Neumayer, "Anleitung zu wissenschaftlichen Beobachtungen auf Reisen." *Nature* says that at the age of four-score years he is issuing the fourth edition of this work, which is appearing in Parts (Jaennecke, Hanover). The work will comprise two volumes, the first dealing with geography and inanimate nature, the second with plants, animals, and man. More than thirty experts are collaborating under Dr. von Neumayer's editorship, so that each subject will be treated by an expert. The price of the two volumes will be 36 marks. The first two Parts contain articles on geographical observations, directions for somatological observations, and the beginning of an excellent article by Dr. von Luschan on field work in archæology. The last edition appeared in 1888, and in many branches of knowledge the advance since that date has been immense.

GEOLOGICAL BIBLIOGRAPHY FOR 1904.—The Geological Survey has issued, as *Bulletin* 271, the "Bibliography and Index of North American Geology, Paleontology, Petrology, and Mineralogy for 1904," compiled by Mr. Fred. B. Weeks. An effort was made to procure for this annual publications which were not noticed in the bibliographies of previous years. The volume contains full titles of papers arranged alphabetically by authors' names, with a brief description of the contents; the index makes full reference to the subjects treated in the papers.

THE TENTH INTERNATIONAL GEOLOGICAL CONGRESS.—This Congress is to meet in the City of Mexico on Sept. 6, next year. Mr. José G. Aguilera, the Director of the Geological Institute of Mexico, has been appointed Chairman of the Committee of Arrangements.

AN INTERNATIONAL COMMITTEE.—The Committee provided for by the Eighth International Geographic Congress to take steps to bring about closer social relations among the geographical societies of the world has been organized as follows: Prof. William Libbey of Princeton University, president; Prof. H. Cordier of the Ecole des langues orientales, Paris; Dr. Hugh Robert Mill, London; Prof. A. Penck of the University of Vienna; Dr. A. de Claparède of the University of

Geneva; Prof. E. von Drygalski of the University of Berlin; Felipe Valle, director of the Observatory at Tacubaya, Mexico; and Eki Hioki, first secretary of the Japanese Legation at Washington.

PERSONAL.

Dr. Robert Sieger, who in 1898 became Professor at the Export Academy in Vienna, and since 1903 has been in charge of the Department of Commercial Geography in the University of Vienna, has been appointed Professor of Geography at the University of Gratz, to succeed the late Dr. E. Richter. Dr. Sieger's writings on physical geography and many other geographical topics made him well known before he turned his attention largely to economic and commercial geography, in which he is an acknowledged expert.

Mr. Charles W. Brown has been appointed Instructor in Geology and Mineralogy at Brown University.

Dr. W J McGee, formerly ethnologist in charge of the Bureau of American Ethnology, has been appointed Managing Director of the St. Louis Public Museum.

Dr. H. Foster Bain, Ph.D., Geologist of the U. S. Geological Survey, has been appointed State Geologist of Illinois.

Mr. Bailey Willis, of the U. S. Geological Survey, will in January next give a course of twelve lectures in the Geological Department of the University of Wisconsin on the subject of "Continental Variations, with Special Reference to North America."

The University of Cambridge has conferred the degree of Doctor in Science upon Capt. Robert F. Scott, the Antarctic explorer, and Sir Francis Younghusband, who led the recent British mission to Lhasa.

Prof. A. P. Brigham, of Colgate University, spent the summer with his family in Great Britain. He also made the cruise of the Norwegian fiords from Odde and Bergen to Trondhjelm, where glacial erosion, the industries, and the Lake Soen landslip of last January were among the things that interested him. Besides revisiting Oxford and London, he spent some time in Norfolk and along the east coast, the country of the Broads and the shore cliffs, with evidences of encroachment by the sea made classic by Lyell in his "Principles." He also visited the Peak district of Derbyshire and the Snowdon region of North Wales, collecting many photographs and comparing different types of scenery and of British rural life.

THE AMERICAN GEOGRAPHICAL SOCIETY.

ANNOUNCEMENT.—At the next meeting of the Society, to be held at Mendelssohn Hall, No. 119 West Fortieth Street, on Tuesday, November 28, 1905, at 8.30 o'clock, P. M., Mr. Bailey Willis will narrate his Experiences among the Chinese.

NEW MAPS.

AFRICA.

AFRICA.—Deutsche Arbeit in Afrika 1884 bis 1905. Scale, 1:25,000,000, or 394.5 statute miles to an inch. By Paul Langhans. *Deutsche Erde*, No. 4, 1905. Justus Perthes, Gotha.

Shows in colours the areas of the German Protectorates in 1884 and 1885, and

their increased area to 1905; regions explored by German travellers; coasts served by German steamship lines in 1884 and the extension of this service to 1905; German planting and trade enterprises before 1884 and their growth to 1905. The map is based upon the new general map of Africa in Stieler's Hand Atlas. It is full of information clearly presented, and gives a good idea of the part Germany has taken in many phases of African development during the past thirty years.

EAST AFRICA.—Eisenbahnkarte von Ostafrika 1905. Scale, 1:12,000,000, or 189.3 statute miles to an inch. Beihefte zum *Tropenpflanzer*, Sept., 1905.

A map in colours showing the completed railroads in East Africa and those now building or projected from the Uganda R.R. in the north to the Beira-Bulawayo R.R. in the south.

EAST AFRICA.—Der Hafen von Kilwa-Kisiwani. No scale. Beihefte zum *Tropenpflanzer*, Sept., 1905.

A black-and-white sketch map showing soundings in the harbour.

EAST AFRICA.—Wirtschafts- und Verkehrskarte des südlichen Teiles von Deutsch Ostafrika. Scale, 1:3,000,000, or 47.34 statute miles to an inch. Beihefte zum *Tropenpflanzer*, Sept., 1905.

An excellent commercial map showing our present knowledge of the distribution of cattle, vegetable products, rubber, coal and iron, and also the caravan and steamer routes, telegraph lines, and the projected railroad between the coast and the great lakes.

SAHARA.—Tracé de la Ligne Télégraphique de Touggourt à Nefta par El Oued. By P. Bayol, Engineer of Telegraphs. Scale, 1:400,000, or 6.3 statute miles to an inch. *La Géographie*, Vol. 12, No. 1. Paris, 1905.

Illustrates the physical conditions along the railroad line from Nefta to Tug-gurt, showing dunes, sand plateaux, oases, wells, etc. Surveys are now in progress for the extension of this telegraph line across the Sahara to Timbuktu.

AMERICA.

CANADA.—New Brunswick. (St. John sheet.) Scale, 1:500,000, or 7.89 statute miles to an inch. Department of Interior. Ottawa, 1905.

This is sheet 13 of the Standard Topographical Atlas of Canada now being produced under the supervision of Mr. James White, Geographer of the Department of the Interior.

CANADA.—Map of Manitoba, Saskatchewan, and Alberta. Scale, 1:792,000, or 12.5 statute miles to an inch. Department of the Interior, Ottawa. Corrected to May 1, 1905.

This map shows the even-numbered sections of land that have finally been disposed of by the Government.

CANADA.—Electoral Divisions in the Provinces of Saskatchewan and Alberta. Department of the Interior, Ottawa, 1905.

The boundaries of the divisions are shown in red.

CANADA.—Electoral Divisions in Southern Alberta. Department of the Interior, Ottawa, 1905.

Shows the divisions as far north as the southern boundary of the former territory of Athabaska.

CANADA.—Electoral Divisions in Southern Saskatchewan. Department of the Interior, Ottawa, 1905.

Shows the divisions on a larger scale as far north as the land surveys have been extended (above 53°). These three maps are an outcome of the admission of the two new provinces into the Dominion.

CHILE.—Canal Smyth and Bahía Muñoz Gamero. Scale, 1:20,000, or 0.3 statute mile to an inch.

Puertos del Seno Otway. Puerto Pomar, scale 1:10,000, or 0.1 statute mile to an inch; Puerto Toro, scale 1:10,000; Puerto Valderrama, scale 1:5,000, or 0.07 statute mile to an inch.

Canal Fitz Roy. Scale, 1:40,000, or 0.6 statute mile to an inch.

Canal Señoret I Estero Eberhardt. Scale, 1:30,000, or 0.47 statute mile to an inch.

Magallanes. Puertos en el Golfo Xaultegua. Estuario Guzman. Puerto Bobillier. Scale, 1:20,000, or 0.3 statute mile to an inch.

All published by the Hydrographic Office, Valparaiso.

These are charts of waterways and natural harbours in the Chilean portion of the Straits of Magellan, made from surveys carried out by the Hydrographic Survey of Chile between 1900 and 1903. Many soundings are given, also the topography of the adjoining shores. They are a contribution to the mapping of Magellan Strait as these parts of it have not been known in detail.

UNITED STATES.—Reduced Survey Map of the United States and Part of Canada. Scale, 1:5,000,000, or 78.9 statute miles to an inch. By J. G. Bartholomew. Edinburgh Geographical Institute, 1905. (Price 2s.)

This small-scale map shows mountain ranges only by hairlines. The result is that topographic delineation does not blur place-names or other information. Everything may easily be read, and all the principal railroads, with many of their branch lines, are admirably laid down. Rivers, nomenclature, and land transport routes are in black. All other colours are confined to the boundary lines of the States and the lakes and ocean, which enhances legibility. On maps of this scale, New Hampshire, for example, is apt to be a more or less indistinguishable blur of mountains and place-names. On this map every detail shown of that State may be easily read. The map is folded for the pocket, and may be especially commended to tourists. Eight insets show the most important cities in the United States on a comparatively large scale.

UNITED STATES GEOLOGICAL SURVEY.

UNITED STATES.—Geologic Atlas of the United States, No. 122, Tahlequah Folio, Indian Territory-Arkansas. Washington, D. C., 1905.

This contains the fourth geological series of sheets of the Indian Territory yet published.

U. S. HYDROGRAPHIC OFFICE CHARTS.

PILOT CHART OF THE NORTH PACIFIC OCEAN. Nov., 1905.

Prints in addition to sailing routes, etc., charts published, cancelled, and corrected from Sept. 1 to Sept. 30, 1905, average weather conditions over the Northern Pacific in November, and (on the reverse) the Storm Signal Code of the Imperial Maritime Customs (Shanghai, China) to come into force on Jan. 1, 1906.

Pilot Chart of the North Atlantic Ocean. Oct., 1905.

ASIA.

RUSSIAN TURKESTAN.—AFGHANISTAN.—*Asie*. Scale, 1:1,000,000, or 15.78 statute miles to an inch. Sheets, Asterabad, Merv, Boukhara, Hérat, and Maïméné. Service Géographique de l'Armée, Paris. (Price, 25 cents.)

These sheets, issued in 1901 and 1902, show progress in the execution of a map of the world on the uniform scale of 1:1,000,000, as recommended by the last three International Geographical Congresses on the initiative of Dr. Penck of Vienna. France was the first country to fall into line with the suggestion, and the French Geographical Service of the Army is now producing this map of Asia on the uniform scale mentioned, the sheets being limited by parallels and meridians. They thus appear, by execution and arrangement, as parts of a general map of the world. The sheets are clearly printed in colours—roads in red, water blue, and railroads and lettering in black, with the relief shown by hill shading and depths of water by contour lines and figures in meters. The present sheets include the southern part of Russian Turkestan from the Caspian Sea to the east of Samarkand and the northwestern part of Afghanistan.

CHINA.—Sketch Map of the River Pei Ho. Scale, 3.06 statute miles to an inch. Imperial Maritime Customs, Statistical Series, Nos. 3 and 4. Shanghai, 1905.

Shows the relations of Tientsin to the mouth of the river, with the railroad and river connections and the cuttings along the Pei Ho which have reduced the length of the river journey to Tientsin about one-fourth.

CHINA.—Plan of the Port of Shasi. Scale, 1 inch to 200 feet. (This map and the three maps following are contained in the volume mentioned above.)

The scale permits a minute plan of the port, but the delineation of the sand-bank in the Yangtse is of only temporary value, as the bank is continually shifting.

CHINA.—Changsha Harbour. Scale, 950 feet to the inch. Surveyed in December, 1904, by D. MacLennan, Harbour Master.

Changsha, the capital of Hunan, was added to the list of China's open ports under the new commercial treaty with Japan. Soundings are given in feet, in the Heng River, on which the city fronts. The Heng is a southern tributary of the Yangtse, and vessels may make the trip to Hankow and return in three days.

CHINA.—Sketch map of the Province of Hunan. Scale, 25 statute miles to an inch.

The drainage is in blue, and mountain features are shown with considerable effect. The map is especially valuable as showing the trade routes in this very active province.

CHINA.—Wuhu City and Surroundings. No scale. 1904.

A map in colours giving a good plan of the city, including the new foreign settlement, in which the positions of the Consulates, Missions, etc., are indicated. There are no wharves, but the position of the hulks, which serve the various shipping lines for the transfer of freight, is shown. This city is one of the new treaty ports on the Yangtse, but the map, though printed in four colours, has neither scale nor geographic co-ordinates.

EASTERN CHINA.—A Khinai Nagy Alföld Szerkezetének Térképe. Scale, 1:3,333,333, or 52.6 statute miles to an inch. *Bull.* of the Hungarian Geographical Society, Vol. 33, No. 6. Budapest, 1905.

One of the excellent maps that Hungary is producing. Coloured to show the geological formations and contours of ocean depths. The Yangtse and Hoang River deltas are sharply differentiated from the neighbouring regions; completed railroads are made conspicuous, except that the German line should have been extended to Tsinan. The map is limited on the west by the 110th meridian and on the south by the 30th parallel.

KARTE VON KLEINASIEN.—In 24 sheets. Scale, 1:400,000, or 6.3 statute miles to an inch. By Dr. Richard Kiepert. Sheets, Adalia and Smyrna. Dietrich Reimer (Ernst Vohsen), Berlin, 1902.

COREA.—Carte des Télégraphes Impériaux de Corée. Scale, 1:4,500,000, or 71 statute miles to an inch. By J. de Moidrey. *La Géographie*, Vol. 12, No. 1, Paris, 1905.

The telegraph lines centring in the capital, Seul, reach Fusan and Masampo, on the south coast, Mokpo, Kunsan, Chemulpo, Chinnampo and Echow on the west coast, and Wunsan, Hamheung, Pukchong, Sungchin, and Kionsung on the east coast, besides various important points in the interior.

TIBET.—Map showing Explorations by Major C. H. D. Ryder, and Capts. H. Wood and H. M. Cowie of the Tibet Frontier Commission, 1904. Scale, 1:2,500,000, or 39.45 statute miles to an inch. *Geog. Jour.*, London, Oct., 1905.

This map, reduced from the sheets of the Survey of India, shows the route north of the main Himalayas between Lhasa and India. The area surveyed on this journey with the plane table was about 40,000 square miles. The triangulation, which is still under compilation, was invaluable in correcting the plane table work and in fixing many heights. While the detailed surveys are not yet ready for publication, the map will be useful for the time being in correcting atlas sheets as far as relates to the course of the Upper Tsangpo or Brahmaputra and the hydrography of the basin of Lake Mansarowar, about which there has been much dispute. The map shows that the Brahmaputra has its birth in the confluence of a number of streams coming from the water-parting between the Brahmaputra and the Lake Mansarowar systems. This lake, on the other hand, is not the source of the Sutlej, affluent of the Indus, as had been supposed; the lake region has at present no outlet, though a former channel leading to the Sutlej River was discovered. An inset shows the triangulation carried out between Lhasa and Mount Everest.

TIBET.—Plan of Lhasa. From a Survey by Major C. H. D. Ryder and Capt. H. M. Cowie, 1904. Scale, 1:30,000, or 2.11 inches to a statute mile. *Geog. Jour.*, London, Oct., 1905.

A black-and-white map showing the plan of the town and the nature of its environment. All the prominent buildings and other important points of interest are indicated.

DUTCH EAST INDIES.—Schetskaart van het Eiland Bali. Scale, 1:250,000, or 3.95 statute miles to an inch. Topographic Bureau, Batavia, 1905.

One of the fine maps of the Dutch East Indies which the Topographic Bureau is now producing. It shows all leading topographic features, the hills in brown, rivers blue, coastal plains and valleys white. The map is rich in place-names and cultural features. All the anchorages, reefs, and sandbanks along the coast, the roads and paths, the provincial boundaries, and many other details are given, including the native temples and towers.

AUSTRALASIA.

AUSTRALIA.—Tasmania. Scale, 15 statute miles to an inch. Government Printing Department, Hobart, 1900.

Coloured to show the counties with railroads and common roads. Hill features are roughly indicated by hachuring. Two insets show the relations of the island to the State of Victoria.

AUSTRALIA.—Map of Western Australia. Scale, 1:502,400, or 90 statute miles to an inch. Department of Lands and Surveys, Perth, 1901.

A black-and-white map showing the boundaries between the land districts, gold fields, and much other detail.

AUSTRALIA.—Map of Western Australia. Scale, 1:5702,400, or 90 statute miles to an inch. Department of Lands and Surveys, Perth, 1903.

An excellent small-scale map that will interest all who are watching the development of this State. Colour is used with tasteful and excellent effect to show the land areas leased for pasturage, agricultural lands open for settlement, gold fields, rainfall belts, railroads, lighthouses, etc. An inset map in six colours shows the distribution of the timber areas.

AUSTRALIA.—Map of Western Australia. Scale, 1:3,168,000, or 50 statute miles to an inch. Department of Lands and Surveys, Perth, 1903.

A map in colours containing practically the same information as that of the map just mentioned, but showing more hill features.

AUSTRALIA.—The following maps of Western Australia, from the Department of Lands and Surveys, Perth, relate chiefly to the Topographical and Geological Surveys carried out in the study of the mineral resources of the State:

Geological Map of Northampton. (2 sheets.) Scale, 20 chains to an inch. 1898.

Geological Map to accompany Report on the Geology of the Kimberley District. (2 sheets.) Scale, 6.5 miles to an inch. Western sheet, 1883; Eastern sheet, 1884.

Plan of Proclaimed Boundaries of the Coolgardie Gold Field. Scale, 10 miles to an inch.

Geological Map of Coolgardie. (4 sheets.) Scale, 10 chains to one inch. By Blatchford and Allhusen. 1898.

Showing geological formations, gold workings, dip of strata, heights above sea-level, depths below surface, boundaries of leases, wells, bores, etc.

Plan of Proclaimed Boundaries of East Coolgardie Gold Field. (2 sheets.)

Mining Map of the Boulder Belt, East Coolgardie Gold Field. (2 sheets.) Scale, 4 chains to an inch. 1900.

Geological Map of the Boulder Belt, East Coolgardie Gold Field. (2 sheets.) Scale, 4 chains to an inch. By Maitland and Campbell. 1903.

Vertical sections to accompany geological map of the Boulder Belt, East Coolgardie Gold Field. By Maitland and Campbell. 1903.

Topographical Map of Menzies, North Coolgardie Gold Field. Scale, 20 chains to an inch. By W. D. Campbell. 1899.

Geological Sketch Map of the Country between Cue, Peak Hill, and Menzies from the Latest Official Information. Scale, 33 miles to an inch.

The geological boundaries are approximate only.

Geological Map of the North Lead, Kanowna. By T. Blatchford. Scale, 8 chains to an inch.

Topographical Map of Kalgoorlie. (4 sheets.) Scale, 10 chains to an inch. Based on tacheometric surveys by Campbell and Becher. Geological Survey of Western Australia. Perth, 1900.

Geological Map of Kalgoorlie. (4 sheets.) Scale, 10 chains to an inch. By A. Gibb Maitland, Government Geologist, and W. D. Campbell. Geological Survey of Western Australia, Perth, 1902.

Topography from tacheometric surveys. Coloured for geology, and the boundaries of mining properties shown.

The Collie Coal Field. Scale, 40 chains to an inch. By A. Gibb Maitland, Government Geologist, 1898.

EUROPE.

EUROPE.—Carte géologique internationale de l'Europe. (49 sheets.) Scale, 1:1,500,000, or 23.67 statute miles to an inch. Part 5, containing sheets A VII, B VII, C VII, D VII, F IV. Dietrich Reimer, Berlin, 1905.

Thirty sheets of this map have thus far appeared, together with the scheme of colours. It would be more convenient for students if the colour scheme for each sheet were printed on the margin, as is done on the maps of the U. S. Geological Survey. These sheets are large, and cannot very conveniently be handled with another large sheet containing a full exposition of the colour scheme, much of which is not applicable to the particular sheet under examination.

GERMANY.—Ergebnisse der Pflanzengeographischen Durchforschung von Württemberg, Baden und Hohenzollern. Karte 1, Verbreitung von Saxifraga aizoon und Silene rupestris; Karte 2, Verbreitung der alpinen Gruppe. Scale, 1:1,000,000, or 15.7 statute miles to an inch. Beilage zu Jahreshefte des Verein für Vaterländische Naturkunde in Württemberg, Stuttgart, 1905.

These maps contain the results of work done by the Union for German Natural History, organized in Württemberg in 1899 to study botanical distribution and obtain data for the production of botanical maps. A large number of volunteer observers participate in the work. The distribution of the varieties of plants, mentioned in the titles, are shown on the map sheets by large blue dots.

GERMANY.—Regenverteilung am 17 Juni, 1904, im Maas, Rhein- u. Wesergebiet. By Dr. P. Polis. Scale, 1:1,250,000, or 19.7 statute miles to an inch. *Peterm. Mitt.*, Vol. 51, No. 9. Justus Perthes, Gotha, 1905.

Dr. Polis is director of the Meteorological Observatory at Aachen. His map, in nine tints of blue, illustrates his article on the cloud-bursts that deluged parts of these river basins.

MONTENEGRO.—Tiefenkarten Montenegrinischer Seen. Gornje Blato, scale 1:25,000, or 0.39 inch to a statute mile; Das Oko am Blato, scale 1:8,000; Rikavacsee, scale 1:4,000, or 333.3 feet to an inch; Bugomirsko Jezero, scale 1:25,000, or 281 feet to an inch.) By Dr. Kurt Hassert, *Peter. Mitt.*, Vol. 51, No. 9, Justus Perthes, Gotha, 1905.

Illustrating an article by Dr. Hassert on topographic surveys in Montenegro. Heights and depths are given in meters.

SWITZERLAND.—Sheets Ober Engadin, Jungfraumassiv-Oberwallis, and Evole-na-Zermatt-Monte Rosa. Scale, 1:50,000, or 0.7 statute mile to an inch. Contour interval, 30 meters. Swiss Topographical Bureau, Bern, 1904.

These three sheets are fine examples of the new map of Switzerland that the Swiss Topographical Bureau is producing on this scale. The scale is large enough to give a clear idea of the lateral and medial moraines of the glaciers. After the style long ago introduced into Swiss cartography, the highest ridges and peaks rise in black masses above the contoured areas, while, at the same time, the cartographer gives a generalized idea of the forms into which they had been sculptured. Ice is sharply distinguished from the land surface by the blue contours of the glaciers, contrasting with the brown contours of the land. With all the great variety of topographic forms and other information shown on these sheets, practically every name in large or small type may be read with perfect ease.

SWITZERLAND.—Sheets, Zürich and Luzern. Scale, 1:25,000, or 0.39 statute mile to an inch. Swiss Topographic Bureau, Bern, 1904.

These beautiful sheets show how adequately all the results obtained by the Survey Department are expressed on this scale.

SWITZERLAND.—Carte Topographique du Canton de Genève. Scale, 1:25,000, or 0.39 statute miles to an inch. Swiss Topographic Bureau, Bern, 1900.

This is a reduction on stone of the 12-sheet map of the canton in the Federal Topographical Atlas. All forest areas are shown.

ATLASES.

STIELER'S HAND-ATLAS.—Neue neunte Lieferungs-Ausgabe. 100 Karten in Kupferstich. Lieferungen 49-50. Justus Perthes, Gotha, 1905. (Price, 60 pf. for each part containing 2 map sheets.)

With these four sheets the Ninth Edition of this most famous of all atlases is completed. The last sheets appear four years after the publication of the first sheets of this edition. The house of Justus Perthes, Gotha, is to be congratulated upon finishing this work, which marks another step forward in the making of atlases combining scientific accuracy with great mechanical excellence. The alphabetical index, which accompanies the last sheets, is a folio of 237 pages, containing about 240,000 names and 36 more pages than the index to the Eighth edition, though it is sold at a smaller price.

No. 71 is Sheet 3 (Guinea) of the 7-sheet map of Africa on a scale of 1:7,500,000, or 118.3 statute miles to an inch. It shows the countries bordering on the Gulf of Guinea, and has insets of the Lower Congo and the coast lands of Upper Guinea on the scale of 1:3,700,000, or 58.3 statute miles to an inch, and of Western Cameroons on a scale of 1:1,500,000, or 23.67 statute miles to an inch. No. 72 is Sheet 4 (Kongo) of the map of Africa, and shows Equatorial Africa between 12° N. and 10° S. It contains a large amount of new information which the surveys of the past few years have made available. Nos. 95 and 97 are Sheets 1 and 3 of the 6-sheet map of South America, by H. Habenicht and H. Salzmann, on a scale of 1:7,500,000.

GEOGRAFIA DE LA PROVINCIA DE CORDOBA.—By Manuel E. Rio and Luis Acha-val, Civil Engineers. Official Publication. Compañía Sud-Americana de Billetes de Banco. Buenos Aires. 1905.

This Atlas accompanies the large work in two volumes "Geografía de La Provincia de Córdoba" by the same authors, one of the most excellent and exhaustive works yet written on any part of South America. It includes 17 large plates of maps, diagrams, profiles, and photographs. The lithographic production of the

maps is somewhat glaring in its use of colors, but this does not detract from the excellent results of the painstaking care with which a large amount of data has been reduced to cartographic form. The sheets include a political map of the province, a hypsometrical map in four colours and white, hydrographic maps, a geological map in seven tints, sheets showing the distribution of the cultivated area of maize, alfalfa, flax, etc., and a sheet showing railroads, telegraphs, etc. There are also small maps and diagrams illustrating climate and density of population, profiles of river valleys and many half-tone pictures of the city of Cordova and views in various town and country districts. Most of the map scales are 1:1,000,000 and 1:250,000. The Atlas reflects much credit upon the compilers and upon the enterprising province of Argentina, which bore the cost of its production.

THE SOUTH POLAR CHART.

This number of the BULLETIN contains a map of the Antarctic regions showing all the larger results of exploration there to the present time. The completion of the map was delayed about two months in the hope, which was fortunately realized, that the cartographic results of Charcot's Expedition to the western coast of West Antarctica might be received in time to be utilized. By waiting for his map, which appeared in the June number of *La Géographie*, it was possible to include in our chart a generalization of the cartographic surveys of all the expeditions of recent years.

With the return of the Charcot Expedition, all research in the South Polar regions is suspended for the present. Considerable time may elapse before it will be possible to add new facts to the information given in this chart.

The additions made by Charcot to the mapping of the west coast of West Antarctica practically complete the survey of that region as far south as Bismarck Bay. He carried on the survey work where the *Belgica* Expedition and Nordenskjöld left it, and mapped the hitherto uncharted outer coast-line of the islands in the archipelago west of Danco Land and Palmer Land (see chart, lower right-hand corner), so that it is possible to show on our map the extent and shape of these islands.

The map was drawn for the BULLETIN by Dr. Hans Fischer, whose advanced geographical scholarship and cartographic skill are well known to geographers. The scale is 1:40,000,000, or 631 statute miles to an inch. The map takes in enough of the southern coasts of America, Africa, and Australia to show the geographical relations of the Antarctic lands to the continental masses north of them.

The northern limits of floating bergs and pack-ice are indicated, and seven tints of blue are used for various ocean depths from shallow waters to over 4,000 fathoms. The lands are shown in brown, and the inland ice and glaciers are marked. The heights of all the more prominent mountains are given in feet, and a large number of ocean soundings in fathoms. The still unexplored area is left white.

In the corners of the sheet are four insets delineating on much larger scales, and therefore in greater detail, parts of the Antarctic Continent, or land-masses the exploration of which was most advanced by the recent expeditions or which are entirely new discoveries. These insets are:

South Victoria Land, on a scale of 1:20,000,000, or 315.6 statute miles to an inch, showing the British surveys of the east coast, together with Scott's route to his farthest south, and also his sledge route westward over the inland ice;

The Region of Mounts Erebus and Terror, on a scale of 1:4,000,000, or 63.1 statute miles to an inch, showing the greatly-changed geographical aspect of this region as revealed by the surveys of the *Discovery* Expedition. The various features of Erebus Island are strongly shown. Scott discovered that the volcanoes Erebus and Terror, made famous by Ross, are on this island instead of on the mainland;

Kaiser Wilhelm II. Land, on a scale of 1:8,000,000, or 126.2 statute miles to an inch, showing the winter station of the *Gauss* about 50 miles from the coast of the newly-discovered land. This fact is given as one of the reasons why the *Gauss* Expedition did not sledge inland on this part of the coast of Antarctica;

West Antarctica, on a scale of 1:10,000,000, or 157.8 statute miles to an inch. Reference to this inset has already been made.

Such a chart as this is an epitome of the history and progress of discovery in the south polar regions. The detailed routes of the earlier explorers were not inserted, as it was thought that these numerous lines would interfere with the clear expression of more important information; but various points these explorers reached and the discoveries they made are given, with dates, so that the contribution of each to the revealing of this region is clearly shown. The routes, however, of the recent British, German, Scottish and Swedish expeditions are given in detail.

Before the recent revival of south polar exploratory enterprise (1898-1904) the best cartographic summing-up of the geographical discoveries made in that part of the world was to be found in Dr. K. Fricker's South Polar Chart in his book "The Antarctic Regions"

(English edition, the Macmillan Company, New York, 1900). His chart was based upon that of V. von Haardt, with corrections made by Dr. Fricker. Any student who may compare our map with that of Dr. Fricker will see that the recent expeditions have made important additions to knowledge, not only of Antarctic lands but also of south polar waters. Our map, for example, shows among the various oceanic discoveries in this southern ocean the submarine ridge found by the *Scotia* on her journey home last year. This ridge, which is coincident with the meridian of 10° W., completely alters previous conceptions of the form of this part of the ocean bed; it is a continuation of the South Atlantic ridge, which is thus found to extend 1,000 miles farther south than it was previously known to exist.

OBITUARIES.

ELIAL F. HALL.

BORN JULY 26, 1827.

DIED OCTOBER 12, 1905.

Mr. Hall was born at Carroll (now Kiantone), Chautauqua County, N. Y., of New England parents, and passed his early years in that place. He was graduated at Yale College in 1849, and then went to Europe, where he studied and travelled for three years, principally in Germany and France. He was admitted to the bar in New York in 1855, but devoted himself for some time to journalism before entering actively upon the practice of his profession.

He had become interested in the subject of civil service reform in Great Britain, and was one of the thirty-two citizens who, in 1877, organized the New York Civil Service Reform Association. Devoted as he was to the cause of good government, Mr. Hall never held office nor sought political preferment.

In 1868 he was elected to fellowship in the American Geographical Society. He became a member of the Council in 1872, and Recording Secretary in 1876. These positions he held until 1894, when failing health compelled him to leave New York for a milder climate during the winter months, which he spent sometimes in Alabama, sometimes in Florida. He made a visit every summer to his friends in this city and in Jamestown, N. Y., where members of his family resided. He was making his preparations to return to

Florida this year, when he succumbed to an attack of pneumonia in New York.

Mr. Hall's interest in geography was a part of his life. He studied systematically the records of the great discoveries in the past, and he followed with close attention the progress of exploration in Africa and Asia and in the Arctic. He wrote on these subjects for the daily press and in the *BULLETIN* with fulness of knowledge and critical good sense. His longest contribution, and almost the only one to which his name is attached, is the paper on Gerard Mercator, printed in 1878.

In private, as in public, Mr. Hall was a man wholly without pretension, firm in his convictions and in his sense of duty, outspoken and loyal and fair-minded.

BARON VON RICHTHOFEN.

A telegram from Berlin has announced the death of Baron Ferdinand von Richthofen at his residence in that city on the 7th of October.

This distinguished geographer and geologist was born at Karlsruhe, in Silesia, in 1833. He studied at Breslau and in Berlin, and accompanied Count von Eulenburg on the Prussian Expedition to Eastern Asia in 1859. For the next twelve years von Richthofen travelled and studied in China and Indo-China, the Indian Archipelago, and Japan.

He returned to Germany in 1872, and has since been identified with the *Gesellschaft für Erdkunde* in Berlin, as Member of the Council, Vice-President, and President. He filled the Chair of Geography, successively, in the Universities of Bonn, of Leipzig, and of Berlin, and in 1902 he became Director of the *Institut für Meereskunde*.

In 1903 he was made Rector of the University of Berlin.

Baron von Richthofen is an acknowledged authority in geography and geology. Among his publications are *The Comstock Lode*; his *Letters on the Chinese Provinces*, addressed to the Shanghai Chamber of Commerce; his *Guide for Explorers*; and his magnificent work on China.

WILLIAM THOMAS BLANFORD.

This geographer, geologist, and naturalist died in England on June 23. For nearly a half century his name was intimately connected with scientific progress in India. His brother Henry, eminent in the same lines of work, died in 1893. William Blanford became

connected with the Geological Survey of India in 1855, and was the first to comprehend and to explain the geological structure of the peninsula. On two occasions he was detached from the Survey: when he went as geologist with the Abyssinian Expedition in 1867, and with the Boundary Commission to Persia in 1872. His scientific interests also extended to natural history. He assiduously collected in its various branches, and his mind was a storehouse of facts relating to the distribution and habits of the Indian fauna. His most important work was "The Manual of the Geology of India," the larger part of which was written by him. This work has been kept up to date, and is the standard authority. After his retirement from the geological field, he edited the comprehensive account of the fauna of British India, published by the Indian Government, and contributed to it the volume on mammalia and two volumes on birds.

CAPTAIN JOSEPH WIGGINS.

This adventurous navigator died on September 13th, in England, aged seventy-four years. He rediscovered, about thirty years ago, an old ocean highway within the Arctic Circle. The problem he set himself to solve was that of navigating the Kara Sea, between Novaya Zemlia and the mainland of Siberia during the two or three summer months when it is comparatively free from ice. This route was navigated over 200 years ago, but had been lost until Captain Wiggins once more found it in 1874. In 1878 he took a steamer through the Kara Sea up the Yenisei River, and discharged her cargo at various points along the river for 1,000 miles from its mouth. These expeditions were successfully repeated in the following years. No fewer than twenty-four expeditions with thirty-seven vessels passed safely through the Kara Sea without the loss of a single ship, until the unfortunate wreck of the steamer *Stjernem*, which Captain Wiggins maintained was an accident that might have happened anywhere. This freightage business proved remunerative; but the Kara Sea route, in recent years, has been neglected in favour of the Siberian railroad and other improved facilities for land transportation. Public interest in the route was revived some months ago by the decision of the Russian Government to convey rails and railroad material through the Kara Sea and up the Yenisei.

HERMANN VON WISSMANN.

This distinguished African explorer died on June 16th at his home near Liezen, in Styria, from the results of an accident while

hunting. Born at Frankfort on the Oder, he chose a military career. While stationed at Rostock he became acquainted with Dr. Paul Pogge, and accepted an invitation to accompany him into inner Africa, whither the German African Association was about to send him for exploration. In 1881-82 they crossed Central Africa from the Portuguese port of Loanda to Nyangwe, on the Congo, making one of the most thorough and scientific explorations that had been carried out up to that time. Their accurate route map, crowded with information, was a model for later explorers. Dr. Pogge then returned to the west coast; but von Wissmann went on to the east, reaching the Indian Ocean at Saadani in November, 1882—the first German to cross tropical Africa. He described this journey in his book, *Unter deutscher Flagge quer durch Afrika*, published at Berlin in 1888.

This brilliant journey led to his employment by King Leopold to explore the Kasai, the largest southern tributary of the Congo. He followed it from its headwaters to its confluence with the Congo, proving that it joined that river far west of the point marked on the maps.

After a few months of rest, he made his second crossing of the continent, reaching the Indian Ocean at the mouth of the Zambezi. The Kasai work was described by von Wissman and his companions—Wolf, François, and Müller—in "*Im Innern Afrikas: die Erforschung des Kassai*," published in 1888. Von Wissmann also wrote "*Meine zweite Durchquerung Aequatorial-Afrikas, 1886-87*," of which an English translation appeared in 1891 under the title of "*My Second Journey through Equatorial Africa*."

In 1889 Prince Bismarck appointed him Imperial Commissioner, with instructions to quell an Arab insurrection in German East Africa—a difficult undertaking, in which he was completely successful. Later he served in the colony under Baron Soden, its Governor. He was the first to launch a Government steamer on Lake Nyassa. He cleared the country between Nyassa and Tanganyika of slavehunters, and went home in December, 1893, with health much impaired. He was appointed Governor of German East Africa in 1895, but was compelled, a little over a year later, to retire from office owing to the state of his health. He will be remembered as an explorer of large achievement and an official of great executive capacity, whose constant effort was to develop the resources of the colony, to promote scientific research, and to improve the condition of the natives.

BOOK NOTICES.

Historia de las Guerras Civiles del Perú (1544-1548) y de otros Sucesos de las Indias, por Pedro Gutiérrez de Santa Clara.

Tomo III. (Colección de Libros y Documentos Referentes á la Historia de América, Tomo IV. Madrid, Victoriano Suárez, 1905.

This third volume (Book III) of the work of Pedro Gutierrez de Santa Clara differs from the preceding two (*see* BULLETIN, Vol. XXXVII, No. 7), in that it is not exclusively devoted to the "more (or less) than civil" wars between the Spaniards in Peru during the years 1544 to 1548. A number of chapters towards and at the end of the volume contain geographical, and especially ethnographical, information. The latter is mostly presented in Chapters LVIII, LIX, LX, and LXI, and the topography is treated from the standpoint of the time. The author divides the mountains of Western South America into the coast range, the Sierra or mountain tablelands, and the Andes proper. This is the same division so well described in 1534 by Pedro Sancho in his valuable report written by direction of Pizarro to the Emperor from Xauxa. But Gutierrez, although more detailed than Sancho, is far less vivid and skilful than Pizarro's secretary. The ethnographic sections teem with information, which, however, must be taken in many instances with great allowance. While the writer claims to have obtained most of it from aged Indians thoroughly versed in ancient lore, many of his statements are so utterly at variance with what other Spaniards, much better situated than Gutierrez, made it their official duty to secure (like Betanzos) that it will require material as yet unknown or inaccessible to establish the reliability of his statements. Thus the tale of the origin of the Inca tribe from Lake Titicaca and its islands, while given by Gomara (and possibly copied by him from Gutierrez or the anonymous *Conquista y Población del Peru*) and already foreshadowed by Oviedo in part, is at variance with the oldest reports on inquiries among the Inca shamans, and is only in part supported by the tales of Garcilasso de la Vega. Still, it is valuable, as explaining the difference between the stories contained in Gomara and Levinus Apollonius, and those of the majority of Spanish writers on ancient Peru, Garcilasso, Cabello Balboa, and Anello Oliva perhaps excepted. At any rate, the book of Gutierrez adds a few more interrogation-points to the already very confusing material extant about the Incas, their origin, and the series of their war-chiefs.

Were we to judge of the general reliability of Gutierrez from his elaborate account of the pre-Columbian landing of "giants" on the southern coast of Ecuador, the judgment could only be unfavourable. He devotes the last chapter of this book to that very interesting and probably ante-Columbian Indian folk-tale. But he does not, like Zárate and Cieza, limit himself to an objective treatment; he elaborates the story in the manner of Oliva's handling of the tale of Manco Capac, adding (while protesting that they are Indian and primitive) details which on their very face appear foreign to the primitive tradition. Thus he places the landing of the giants at about a century previous to the arrival of Pizarro, and shows himself, at the same time, to be sadly mixed up in the geography of the country! It may be that he wrote such parts of his work at a much later date, which would explain some errors and contradictions.

The period covered by the historical sections is that between the departure of Francisco de Carbajal from Quito and his expeditions against Centeno and Mendoza. He enters into minute details about every act of Carbajal, and places before the reader a most vivid picture of the intrigues constantly going on among the Spaniards. He also furnishes proof that Carbajal and Pedro de Puelles were urging Gonzalo Pizarro to have himself proclaimed monarch of Peru. It was, perhaps, a grave mistake on the part of Gonzalo not to have followed the advice. Under any circumstances he would not have been worse off. As to the picture Gutierrez presents of Carbajal, it is, in this volume, painted by one who saw in the great soldier of Gonzalo Pizarro (for such a qualification cannot be denied to Carbajal) first the chief traitor, next a fiend incarnate, and in both Gutierrez certainly is right. To find a parallel to the career of daily butchery (of Spaniards chiefly) Carbajal followed up to almost the end of his life we must turn to the expedition of Pedro de Ursua of 1560, after the latter had been murdered, and the exceptional monster, Lope de Aguirre, secured control of the "Marañones." Not in vain had Lope de Aguirre served under Carbajal.

It is not to be wondered at if, in this third volume, Gutierrez shows more of a partisan feeling than in the preceding ones. The faithful vassal and the man of ordinary humane feelings could not, without indignation and just wrath, describe the awful doings of an octogenarian, whom age, in addition to a life spent exclusively in wars of all sorts, had converted into a superior killing-machine. Such a one Carbajal had become. He prided himself on it, and his faithfulness to the cause of Gonzalo Pizarro justified in his own eyes the ferocity of his deeds.

It is with something like impatience that we look forward to the remaining two volumes of this highly interesting and valuable work. A. F. B.

Trois Mois de Campagne au Maroc, Étude Géographique de la région parcourue. Par le Dr. F. Weisgerber. 44 illustrations. Cartes, Photographies, Dessins. Ernest Leroux, Editeur. Paris, 1904.

Both author and publisher are to be congratulated; the author on having written a book at once timely and instructive on a little-known subject, the publisher on the handsome style in which the work is produced.

After a brief introduction the author divides his work into three parts: The first, from Casablanca to Sokhrat-el-Djeja; the second, the M'halla or imperial camp, the Sultan, the Makhzen or Government, the army and life in camp; the third from Sokhrat-ed-Djeja to Marrakesh. The appendix, usually a sort of scrap-bag in books, is an attractive feature of the volume, being a serious geographical study of the almost unknown region traversed; its orography, hydrography, geography, climate, flora, fauna, and population.

The reader will share the author's astonishment that this large and rich country of Africa, the nearest to Europe, should still be almost a *terra incognita*.

The explanation is found in the political conditions; this vast territory of over 200,000 square miles, with a population of, perhaps, ten millions, being without the cohesion of a European state. The effective authority of the Sultan has never extended over a third of the country, which is divided into *Bled-el-Makhzen*, or country of government, and *Bled-es-Siba*, or country of the unsubdued and roving independent tribes.

The Bled-el-Makhzen consists of the *Gharb* and the *Houz*, the ancient kingdoms of Fez and Marrakesh, comprising the greater part of the region between the

Atlas and the Ocean. The plains and cities, above all, recognize the Sultan as political and religious chief, and pay tribute.

The Bled-es-Siba consists of the Rif coast range, the Jebala, the wooded mountainous region of Braber, south of Fez and Mequinez, and thrust in like a wedge between the Gharb and the Houz, almost reaching the sea near Rabat, and, finally, the Atlas chain and the vast regions of the desert beyond. This immense territory is peopled by independent tribes, some of which recognize the Sultan as *imam* or sovereign pontiff, and send him presents on the occasion of Mussulman fêtes. The greater number, however, refuse to acknowledge him as their spiritual head, and no one tribe admits his temporal sovereignty.

Even where the Sultan reigns as autocrat revolts are not rare. The cause of the insurrection is nearly always the same; the exactions and injustices committed by the *Càids*, or Governors, who, having purchased their posts, *squeeze* their protégés. The exasperated tribes refuse to pay the tax and rebel, with the result that troops invade their territory, pillage and destroy and cut off heads. When the insurrection is serious the Sultan, accompanied by his Court, leads his army against the rebels.

Dr. Weisgerber believes that Morocco will not be able to recover herself. The events of the past two years have left the Sultan in a precarious position. In the north the insurrection of Bir Hamara controls the Rif and the northern Braber. The communications of Fez with Tafilelt are severed; the Jebala make incursions into the plain; the Western Braber infest the region of the Gharb and the approaches to Mequinez, Sale, and Rabat; and there are serious risings in the Sus. On all sides the independent tribes are pressing upon the "country of government." If Morocco is to be saved the power of the Sultan must be supported from without, and the author believes that the task will necessarily devolve upon France.

The occasion of Dr. Weisgerber's journey was the serious illness of the Grand Vizier in the camp at Sokhrat-ed-Djeja. There was no physician in the Sherifian army, and Dr. Weisgerber was summoned to attend the illustrious patient.

Casablanca, the starting-point of the journey, lies midway between Cape Spartel and Mogador. It is a purely commercial town, with narrow streets and with no striking monument.

In three days the Sultan's camp was reached, and there Dr. Weisgerber remained for three weeks. The time was January, 1898; the rains were incessant, and the cold was very great. The army had occupied the ground for two months, and it was a foul quagmire. The troops had ravaged the country. The animals, and especially the camels, were dying for want of pasture, and where they fell there they lay. Dr. Weisgerber, wandering one day by the brook which flowed past the camp, found it choked with dead bodies, and saw the water-carriers quietly filling their skins from the stream below the obstruction.

When the campaign opened the Government paid eight dollars for a prisoner and four dollars for the head of a rebel; in January the rates had fallen to two dollars and one dollar. Occasionally a party returned from a raid in the mountains bringing prisoners and cattle and carrying on bayonets the heads of victims, to be salted and distributed throughout the empire by way of warning to the ill-disposed. The captured slaves—and sometimes also free women and children—were led through the camp and sold to the highest bidder.

The fate of the other prisoners in such cases is miserable enough. They are kept for a time in the camp, until it is found that they cannot or will not pay the price of their ransom, and then they are sent to the prisons of Marrakesh, Moga-

dor, or Rabat, where they are shut up without air and without light till their ransom is paid or they perish.

Dr. Weisgerber saw six hundred of these unhappy beings, each with an iron collar fastened to a long chain which bound the victims together, with about twenty inches space between them. That they may be inspected more easily, they are forced to keep themselves crouched in an enormous spiral, and so closely huddled one upon another that they can only move in a body. They are poorly clothed, and some are quite naked, and so they lie in the mud and the rain and the cold wind. There were children among them. They are fed on cakes of barley meal, and once a day the bodies of those that succumb are removed from the chain. When Dr. Weisgerber first arrived at the camp the deaths among the prisoners numbered ten a day; in the last four days of his stay there were a hundred deaths.

By the last week in January the camp broke up. The district was pacified; the taxes and the war contributions had been levied, the country was devastated, and the inhabitants were scattered and reduced to misery.

The day of the departure Dr. Weisgerber stationed himself, with his attendants, on a little eminence, to see the march of the army. The white tents disappeared as by enchantment, the great imperial tent standing alone for a time. At last this was struck and packed on mules, and the disorderly multitude began to move; camels and mules, the Sultan's horses led by slaves, infantry soldiers, chains of twenty and thirty prisoners, horsemen with long guns, negresses riding astride on mules, and then the Sultan's harem, surrounded by a guard of eunuchs armed to the teeth and crying: "Room for the wives of our lord!"

Behind the harem a troop of horsemen and standard-bearers preceded the Sultan, who wore a snow-white burnoose and rode a black horse, with trappings of green and gold. An attendant followed, holding above the Sultan's head an enormous red silk parasol. The Grand Vizier rode near the Sultan, and then came a closed litter covered with leather and borne by richly-caparisoned mules. Four magnificent horses, saddled and bridled, were led by grooms; after these came the dignitaries of the Court, the military band, and an escort of the Sultan's black bodyguard.

It is something to have seen the simple methods of government in operation in Morocco.

CH-L.

Japan. Nach Reisen und Studien im Auftrage der Königlich Preussischen Regierung dargestellt von J. J. Rein, Professor der Geographie an der Universität Bonn. Erster Band: Natur und Volk des Mikadoreiches. Zweite, neu bearbeitete Auflage. Mit 2 Abbildungen im Text, 26 Tafeln und 4 Karten. Leipzig: Verlag von Wilhelm Engelmann, 1905.

In few parts of the world have the last decades brought about so many vital changes as in the empire of the Mikado. This second edition of Professor Rein's Japan, long recognized as authoritative, has therefore been greatly enlarged, partly rewritten, and in many parts become almost a new book. In its new form it is again the most complete, reliable, never-failing reference book on the country and its people, from the legendary creation of the islands to the outbreak of the Russo-Japanese war. The first volume, which has just been published, is the more strictly geographical one, while the second deals with the commercial and economic conditions of the country. It is impossible, of course, in a mere review of such a book to do more than pick out at random points which seem

to be of the most general interest. The volume consists of two divisions—the country and the people, respectively. The former deals with the location, natural and political divisions, coast-line, border oceans, ocean currents, geology, physiography, hydrography, climate, flora, and fauna of the Japanese islands; the latter with the history, anthropology, and ethnology of the nation, and the descriptive geography of towns and cities having more than 20,000 inhabitants. An especially valuable introduction gives a vocabulary of Japanese words, which occur frequently in geographic names.

In the spelling of names the author uses the English transcriptions, with the exception of *Tokio* and *Kioto*, which is the accepted French spelling, and which, in accordance with Sir Ernest Satow, he considers a better equivalent of the Japanese sound than *Tokyo* and *Kyoto*. Long vowels are marked *ā*, *ē*, *ī*, *ō* *ū*.

Japan of to-day consists of two natural and historical divisions: Old Japan—viz., the territory of the feudal times, from 1600 down to the middle of the 19th century, and the islands, of more or less colonial character, which were acquired during the last century. Old Japan includes: (1) Honshu ("main land"), or Honto ("main island"), or Hondo ("main part"); (2) Kiu-Shu ("the nine provinces"); (3) Shikoku ("the four provinces"), and (4) the lesser islands of Sado, Oki, Tsushima, Ōwagi, and Iki. It is these eight islands which were comprised formerly by the name of Oyashima ("the great eight islands"), and to which latter the name of Japan was first applied.

The history of this name repeats in an interesting way that of the country itself. Its original root is the Chinese *Dji-Pên* ("origin of the sun"), or *Dji-Pên-Kuē* ("land of the origin of the sun"—the Levant of the Chinese). With the extension of Chinese influence and civilisation across the Japanese Sea, *Dji-Pên* was adapted to the Japanese tongue as *Nihon* or *Nippon* (Jap. "nitsu"=sun, "hon"=origin), or *Dai*- ("great") *Nippon*. *Dji-pên-kuē*, on the other hand, became the "Zipangu" of the Middle Ages through the Italian rendering of Marco Polo, and the "Cipango" of the later Spanish chroniclers. When, in the 17th Century, the Portuguese and Dutch missionaries re-discovered the islands, they transcribed the name as *Ja-pón* or *Ja-pán*, respectively.

The Germanic tongues prefer the form *Japan*, the Latin tongues take *Japon*. The Japanese continue to use the name *Nippon*, not for the main island, but for the whole empire, and call themselves *Nippon-Jin*- ("jin"=people).

The natural divisions of the more recently acquired parts of the empire are: (1) the Riu-Kiu (Chinese Liu-Kiu) Islands, acquired in 1876; (2) Formosa ("the beautiful one"), and the Pescadores Islands, acquired in 1895; (3) Hokkaidō ("North district"), which was declared a colonial province in 1872 and includes (a) the island of Hoko-shu (North land), wrongly called Yezo on most maps, (b) the Kurile Islands, and will now probably receive the further addition of (c) Southern Sakhalin. As to Yezo, this name is used by the natives exclusively to designate a tribe of *Ainos* in the northern part of the island wrongly so named; Hokkaidō is the name used for the island by the Japanese. Unfortunately this name, like many other popular names, is not very strictly limited; it sometimes refers to the island alone, and sometimes to both this island and the Kuriles. Professor Rein suggests the adoption of a definite geographical name for each, proposing for this island alone the name of Hoko-shū (corresponding to Hon-shū), so that Hokkaidō may be reserved for the district. This sensible suggestion ought to be endorsed by geographers in general.

These natural divisions, a knowledge of which is indispensable for understanding the development of the country, have now been supplanted, however,

by a modern division into administrative districts ("ken"), in much the same way as the old French provinces were superseded by the department system. There are forty-six "ken" in all, to which are added the "Fu" or capital districts (Kiôto, Tôkiô, and Osaka) and twenty-one "colonial" districts or "Chô" (in the Formosa and Hokkai-dô divisions).

The Japanese consider themselves and their country of divine origin. Their legends relate that the god Izanaga dipped his lance into the ocean, and the drops of water falling from it into the sea formed the Oyashima Islands, Awa ji first. On this the god settled with his wife Izanami, another Adam and Eve, and they had five children. Their most beloved daughter Amaterasu—Omikami, goddess of the sun, and to this day the special patron goddess of the people—was the grandmother of Ninigi-no-Mikoto, who was sent from Heaven to rule the islands, and from him descended Jimmu-Tennô, the first historical Mikado (660-585 B. C.). Tennô (Chinese "ten"—Heaven, "ô"—king) has since been part of the name of every Mikado and is still his title among the common people. Like the Chinese, the Japanese considered their country the centre of the world as long as the rest of the world was more or less unknown to them. Of this belief the name Dai-Nippon bears evidence, and in proportion as education and travel have widened the horizon of the nation the prefix has gradually been dropped.

The historical part of the book will perhaps be the most interesting for the general reader; it must certainly be ranked with the most fascinating reading not belonging to fiction. The author distinguishes eight periods in the national history, limited respectively by the years 600 B. C.-794 A. D.; 1199-1333-1573-1600-1853-1868-Present. Among the more or less legendary records of the first period, the earliest attempts to conquer Korea and the introduction of Chinese civilisation and of Buddhism are undoubtedly historic. The second period includes the age of feudalism and military despotism, the rivalry of the great clans of the Fujiwara, Taira, and Minamoto; the establishment of the position of Shô-gun as an hereditary office whose holder, while originally a mere commander general and nothing more than the first vassal of the Crown, became *de facto* the unlimited ruler of the nation, reducing the Mikado to a mere dummy on the throne. The Shô-guns themselves find their masters in the third period, when the Hôjô clan, holding for years the office of Shikken (Prime Minister) terrorised the Shô-guns as those had the Mikados, both Mikados and Shô-guns being children under age, whose name lent official sanction to the doings of the despots, and who were dispatched to a monastery as soon as they grew of age to be replaced by another minor. This scandal was stopped in the fourth period, when the Ashikaga family got hold of the Shô-gunat and re-established its former power after defeating the Hôjôs; in this period, also, the first visitors from Portugal appeared on Japanese shores and the first missions were founded by the Jesuits. This is followed by another period of civil wars and feuds between various usurpers on the seat of power, during which, however, occurs the conquest of Korea through the famous General Hideyoshi. The sixth at last is again a period of peace under the Shô-gunat of the Tokugawa family, whose greatest representative, Iyeyasu, lays the foundation for order and prosperity through his famous code of laws; but the desire for consolidation and unification of the empire also leads to the persecution of the Christians, not so much for religious as for political reasons, and to the exclusion from contact with foreign nations. Then the seventh period brings the awakening of the nation after Commander Perry's visit, the abdication of the last Shô-gun, and the reinstatement of the Mikado in political power, and the eighth and last period is identical with the reign of the present Mikado, Mutsuhito, the

period of the absorption of Western progress, of the various crises which the country underwent through the new régime, and the clashes with her neighbours on her way to expansion. Through all of these records, from the earliest dawn of history to modern days, the heroic element is prominent, and certain phases and features of the events most strikingly recall parallels from Western histories. There are Japanese King Arthurs and Bayards, Wars of the Roses, feuds between Guelphs and Ghibellines, Napoleons and Gambettas. Nothing can demonstrate better than this history how much, in spite of all the differences in race, civilisation, and culture, the Japanese have in common with the Western world.

Ethnologically, Professor Rein distinguishes two types among the population: the first a fine, slender one, reminding us of the Korean and Manchu build, with an oval face, slightly protruding jaws, a finely-curved nose, etc.; the other a shorter, more broad-shouldered type, with a round face and plain nose, resembling in a striking way the Malays of Annam, Siam, and Java. The Ainos can no longer be classed with the Mongolian races; they may even possibly be Caucasians. The most important discovery concerning them was recently made through a study of geographic names, which proves that, at some remote period, they must have inhabited all of Old Japan. Old burial mounds and kitchen middens support a theory that probably the slender, Manchurian-like race immigrated from Korea to Kiu-shû and, taking more and more possession of the country, drove the Ainos farther and farther back to their present restricted area in the North. For the origin of the Malay component nothing equally convincing can be said, yet the resemblance with the inhabitants of Indo-China in stature, dress, character, and customs is so striking that the theory of an immigration from there *via* Formosa and the Riu-Kiu islands seems perfectly legitimate in the absence of further evidence.

The Japanese language, too, is a mixture of two different components: the original Japanese idiom ("Yamato-Kotoba") and Chinese. From the two the modern Japanese ("Nippon-no-Kotoba") has developed, not by amalgamation, as English has from Norman and Saxon elements, but by mere agglomeration. In the written tongue the Chinese component is still so visible that a Japanese and a Chinese may understand each other by means of a written conversation, while they will not understand one spoken word. It is greatly to be regretted that at the time when Japan first felt the need of a written language there was nothing but Chinese at hand to borrow from. The adoption of any European alphabet would certainly have been just as efficacious for rendering the sounds, and would at the same time have allowed the language more freedom and flexibility than it now has. With all its harmonious sounds, the language is so little developed that scientific publications simply have to be written in a Western language, because it is an absolute impossibility to express in Japanese the fine shades and relations of thought needed to express the results of abstract scholarship. The language is like a clumsy tool, with which even a skilful worker can reach only imperfect results. A number of expressions needed in order to bring the vocabulary up to the wider intellectual horizon have been borrowed from the Chinese; but even this remedy is not always satisfactory. Yet the suggestion sometimes made to adopt English as the national idiom have naturally met with grave objections, which are not likely to be soon overcome.

As to the purely geographical and topographical parts, too much detail is involved there to make even a flying review possible. It remains true of these chapters, as of the whole book, that they cannot be excelled for completeness and thoroughness. While it is to be hoped that the English translation of the first

edition may soon be brought up to the standing of this second, it may be said here that the style of the original possesses in a high degree the qualities of clearness and simplicity, so that no one with a fair reading knowledge of German need fear to attempt the original.

M. K. G.

Forest and Climate.—The Primer of Forestry, by Mr. Gifford Pinchot, is a book of 176 pages, in two parts, distributed by the U. S. Government. The first part, dated 1903, deals with *The Forest*; the second, dated 1905, is entitled *Practical Forestry*. There is much information in these two little volumes, and they should be generally read. The second part, but recently published, contains a chapter on *The Weather and the Streams* (Chap. III, pp. 56-73), in which a well-written summary of the relations of forests and climate, and of forests and stream-flow, is given. It is clearly pointed out that much has been written and said on the relation of forests and climate without proper basis of fact, which in this case is a series of accurate meteorological observations, continued for a sufficient length of time to make it certain that any apparent changes are not simple periodic oscillations, without definite progression in any one direction. The effect of the forest in lowering the air temperature; in moderating the extremes; in increasing the relative humidity; in decreasing evaporation, are all noted. The most important question of all, the effect of forests upon rainfall, is treated with proper caution. Emphasis is laid on the difference in the catch of rain as the exposure of the gauge varies, and on the contradictory conclusions which have been reached as regards the relation in question. This part of the subject is hardly as fully treated as its importance warrants, but the space is limited. "Whatever doubt there may be," says the author, "about the action of the forest in producing rain, there is none about its effect on rain-water after it has fallen," and then a series of illustrations and well-chosen comments bring out the relation of forests and stream-flow.

In the first part of the *Primer* (Chap. II, pp. 25-30) the various requirements of trees as regards temperature, moisture, exposure, etc., are briefly touched upon.

R. DE C. W.

Jungle Trails and Jungle People. Travel, Adventure and Observation in the Far East. By Caspar Whitney. ix and 310 pp. and 37 half-tone illustrations. Charles Scribner's Sons, New York, 1905. (Price, \$3.)

Mr. Whitney's reputation as a writer of books of travel and adventure that are both entertaining and valuable was established long ago. It is a far cry from the monotonous bleak and snow-buried lands of northern Canada, the scene of one of his most notable books, to the wildernesses of the tropical Orient, with all their great variety, which he now describes. Mr. Whitney certainly found among these jungles more promising materials than the frozen north afforded him; and he tells in his best manner much that is often novel and always interesting about the human and the brute life that he saw during his wanderings in India, Sumatra, Malay, and Siam. He took part in a short campaign of elephant-catching in Siam, went tiger-hunting in India, and had many other adventures of the Nimrod type, with plenty of the excitement of killing big and formidable game; but he says himself that he never presses the trigger excepting to get needed meat or an unusual trophy, and the book shows that his studies of wild human life, during his wanderings, were of more interest to him than the mere destruction of game. Mr. Whitney has written no more interesting or informing book than this one. The illustrations are characteristic and excellent.

From the Cape to the Zambesi. By G. T. Hutchinson. Introduction by Col. F. Rhodes. xiv and 202 pp., 31 Illustrations and Index. John Murray, London, 1905. (Price, 9s.)

This book is worth reading by everybody who cares to keep in touch with South African progress. That region is to-day in a state of constant change, for it is a country in the making; and we have seen no book from which so much may be learned about the present prospects there as from this volume. About one-third of it is given to Rhodesia, a country that is larger than France and Spain together. Much of it is adapted for white occupancy, and all of it is now in the pioneer stage of development.

Other chapters especially filled with information and deduction are those on Cape Colony, Kimberley, the Victoria Falls, the native and land questions, and the gold-mining interests. We gain a good idea, for example, of the variety of causes that have brought about the present depression, following the boom period just after the war. We learn of the enormous influence of the De Beers Diamond Mining Company, which actually controls Kimberley, and provides a large part of its municipal revenue. The author gives a very interesting account of the serious dispute that has arisen between the 12,000 white settlers of Rhodesia and the British South African Company, which governs them. It remains to be seen, as he says, whether the Chartered Company will be content to abandon all hope of immediate profit, to take up the difficult path of retrenchment and reform in Rhodesia, and look for reward in its future greatness. He discusses all phases of affairs there, and expresses the view that in the matter of roads, hospitals, postal and telegraphic systems and public works generally, Rhodesia is better equipped than any other country of its age.

Tourists are now flocking to the Victoria Falls of the Zambezi, and, in Mr. Hutchinson's opinion, "The new hotel, the Canadian canoes, the crowds of camera-laden visitors, or the scene of bustle and activity at the railway station and the bridgehead, all appear singularly out of place; indeed, the Victoria Falls had been described by one, who knew them in the old days, as 'a mass of water surrounded by tourists.'"

The illustrations are admirable.

Canada As It Is. By John Foster Fraser. 303 pp., 47 full-page Illustrations from Photographs, and Index. Cassell & Company, New York. (Price, \$2.)

Mr. Fraser is a British journalist and novelist who has travelled nearly everywhere, and describes what he sees in a breezy way with many bits of shrewd observation. He shows us a panorama of Canada from sea to sea. He seems to touch everything in a light and jaunty manner, but for all that he gets beneath the surface, and we really garner the essence of many things. No one who is familiar with the fruit fields of the Niagara peninsula, the wheat plains of the central region, the glories of the Canadian Rocky Mountains, the cañon of the Fraser River, or the various types of the Canadian people, will say that his word-pictures, sketched though they be with a few strokes of the brush, and lacking in detail, are not the truth after all, and, generally, the part of it best worth knowing. The book is handsomely illustrated.

A Commercial Traveller in South America. By Frank Wiborg. xv and 159 pp., 9 Illustrations, and Index. McClure, Phillips & Co., New York, 1905. (Price, \$1.)

A readable little book, giving a business man's impressions of South America

as seen at its most important seaports and on the journey by rail across the continent from Valparaiso to Buenos Aires. Mr. Wiborg eschews statistics, and there is not a dull page, even though the author keeps an eye out for facts of special interest to his compatriots who are looking southward for trade openings. Crossing the Isthmus of Panama, he made many stops on the west coast of South America as far as Valparaiso, where he crossed the Andes and the Pampas to Buenos Aires, and then went up the east coast.

He shares the opinion, now generally held, that with the strict sanitary measures and modern sewage system now being introduced, the Isthmus and City of Panama will be transformed into a pleasant and healthful place to live; and he speaks of the pampas of Argentina as the finest agricultural country in extent and richness that he saw in South America. The concluding chapter is given to observations on our trade with those countries. Our business relations there, in his opinion, require better and direct transportation facilities, a better system of banking and collections, more competent business agents and greater care in the filling of orders. Geographically there is nothing new in the book, but it presents in an agreeable way a good deal of information, and is differentiated from other books by the author's point of view.

The Geography of New Zealand. Historical, Physical, Political, and Commercial. By P. Marshall. x and 401 pp. Maps, Illustrations and Index. Whitcombe & Tombs, Limited. Christ Church, N. Z., 1905 (?). (Price, 4s. 6d.)

This is a description of one of the most interesting of countries, according to the spirit of the new geography, as defined by Dr. Mill when he wrote:

Geography is the science that deals with the forms of relief of the earth's surface and with the influence which these forms exercise on the action of all other phenomena.

Prof. J. W. Gregory introduces the book with a fine chapter on the geographical plan of New Zealand—its continental structure, the variety of its land-forms, its mountain and volcanic systems, etc. Part 2 (30 pp.) deals with the physical geography, the origin and development of the relief forms, the influence they exert upon the distribution of land and water areas, their effects upon the distribution and nature of the plants and animals, and, in conjunction with the distribution of minerals, upon the areas occupied by man and the nature of his industries. Part 3 (88 pp.) considers the political institutions and economic geography. Prof. Gregory also contributes the chapter on Geysers, Mr. G. Hogben the chapter on Earthquakes, and the description of the Maori is supplied by Mr. A. Hamilton.

The book is copiously illustrated with maps and photographic half-tones. The author admirably carries out his plan of treatment; and as these islands present a remarkable collection of typical geographic models, such a book cannot fail to be very suggestive to teachers and writers as to some excellent methods that may advantageously be followed in dealing with other countries.

The Other Side of the Lantern. An Account of a Commonplace Tour Round the World. By Sir Frederick Treves. 419 pp. and Index, 40 Illustrations from photographs by the author. Cassell and Company. New York, 1905. (Price, \$5.)

A volume that will take its place in the first rank of recent books of travel by reason of its charming style and sustained interest. The author's descriptions are never tedious nor overweighted with detail. His route around the world did not leave the beaten track; but his impressions are fresh, and he imparts them

in a pleasant manner. He was presented to the Emperor and Empress of Japan, and has this to say of them:

The Emperor was dressed in a dark military uniform very like that of a French general. He is the 22nd member of his family, in unbroken line, who has ruled over Japan. His appearance is familiar through published photographs. His face remains immobile, and, if one may say so without disrespect, it is expressionless, impassive, and mask-like. As his Majesty does not speak English, his questions and my answers were interpreted by one of the Lords-in-Waiting. The etiquette of the Court requires that the conversation should be in so low a tone as to be practically whispered. The Emperor was good enough to ask about my journey and my impressions of Japan. He made enquiries as to the health of His Majesty the King of England, and asked me much as to my opinion of the Japanese military hospitals, medical field equipment, and the like.

Her Majesty the Empress received me in an adjacent room, in which she had already graciously received my wife and daughter. She was attended by her Lord Chamberlain and three Ladies-in-Waiting, who were all in European dress. The Empress, whose face is most vivacious and alert, also speaks no language but Japanese. The conversation I had the honour to hold with her took place through the medium of a Lady-in-Waiting, and was conducted in a whisper.

Lectures on Commerce. Delivered before the College of Commerce and Administration of the University of Chicago. Edited by Henry Rand Hatfield. Vol. 1 (second edition). viii and 287 pp. and Index. The University of Chicago Press, Chicago, 1904. (Price, \$1.50.)

In the introductory lecture treating of the "Higher Commercial Education," Prof. Laughlin says that the essential aim of a college of commerce should be not only to give useful information, but also to give the knowledge of underlying principles and that mental grip which will provide the possessor with the capacity to meet comprehendingly new problems. Five lectures follow on railroad management, operation, and problems; five on trade and industry—The Steel Industry, History of the Art of Forging, Commercial Value of Advertising, Methods in Wholesale Business, and The Credit Department of Modern Business; and five on Banking and Insurance—The Comptroller of the Currency, Methods of Banking, Investments, Foreign Exchange, and Fire Insurance. These lectures were given by men of affairs and of eminence in their callings, who from their long and rich experience contributed in this manner to acquaint students with some of the practical aspects of business. All the advanced commercial courses in our schools may profit by these authoritative series of lectures.

Ethiopia in Exile. Jamaica Revisited. By B. Pullen-Burry. 288 pp. T. Fisher Unwin, London, 1905. (Price, 6s.)

The book deals with the life and conditions of the negroes of Jamaica and the United States. The Jamaica chapters occupy about two-thirds of the space, and include, besides the main topic, a large amount of information on the present state and prospects of the island, with many suggestions to tourists as to what to see. The tourist traffic is rapidly developing, and many Americans are flocking there. On the whole, the author, an English lady, gives a favourable impression of the Jamaica negroes. An increasing number of the descendants of the former hard-working slaves are becoming owners of land and are learning to cultivate the soil intelligently and profitably. Illiteracy is gradually being stamped out, with other objectionable features handed down from the semi-savagery of slavery. This progress, observes the author, is in marked contrast with the backwardness of most of the other Caribbean negroes, but it does not imply as much advance as the study of the African race in the United States reveals. An able and careful summary of the negro problem in our country, occupying about 100 pages, is based upon the author's own investigations and the authoritative data and opinions thus far published. The book is written with more than ordinary breadth of view and in a scientific spirit.

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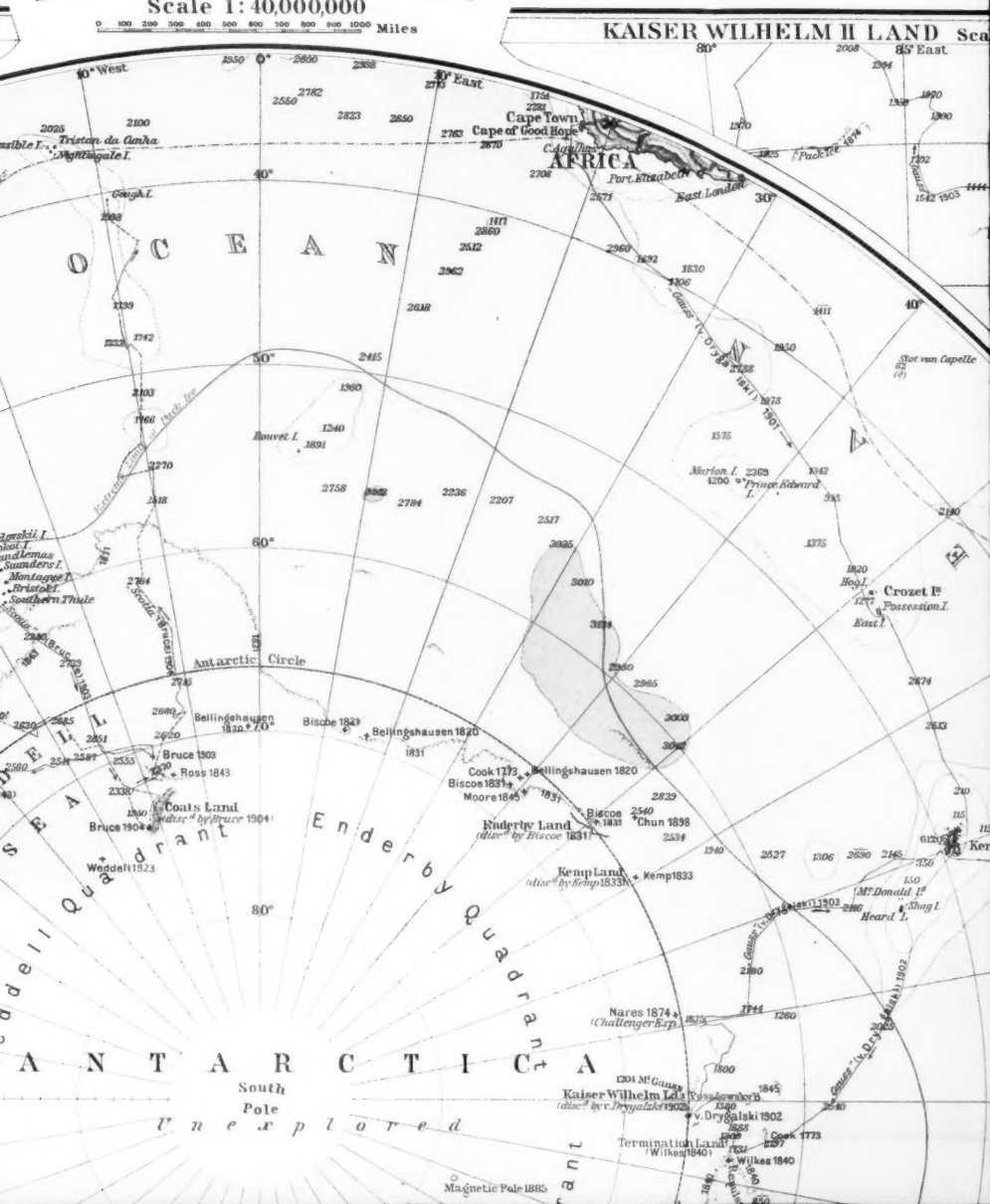
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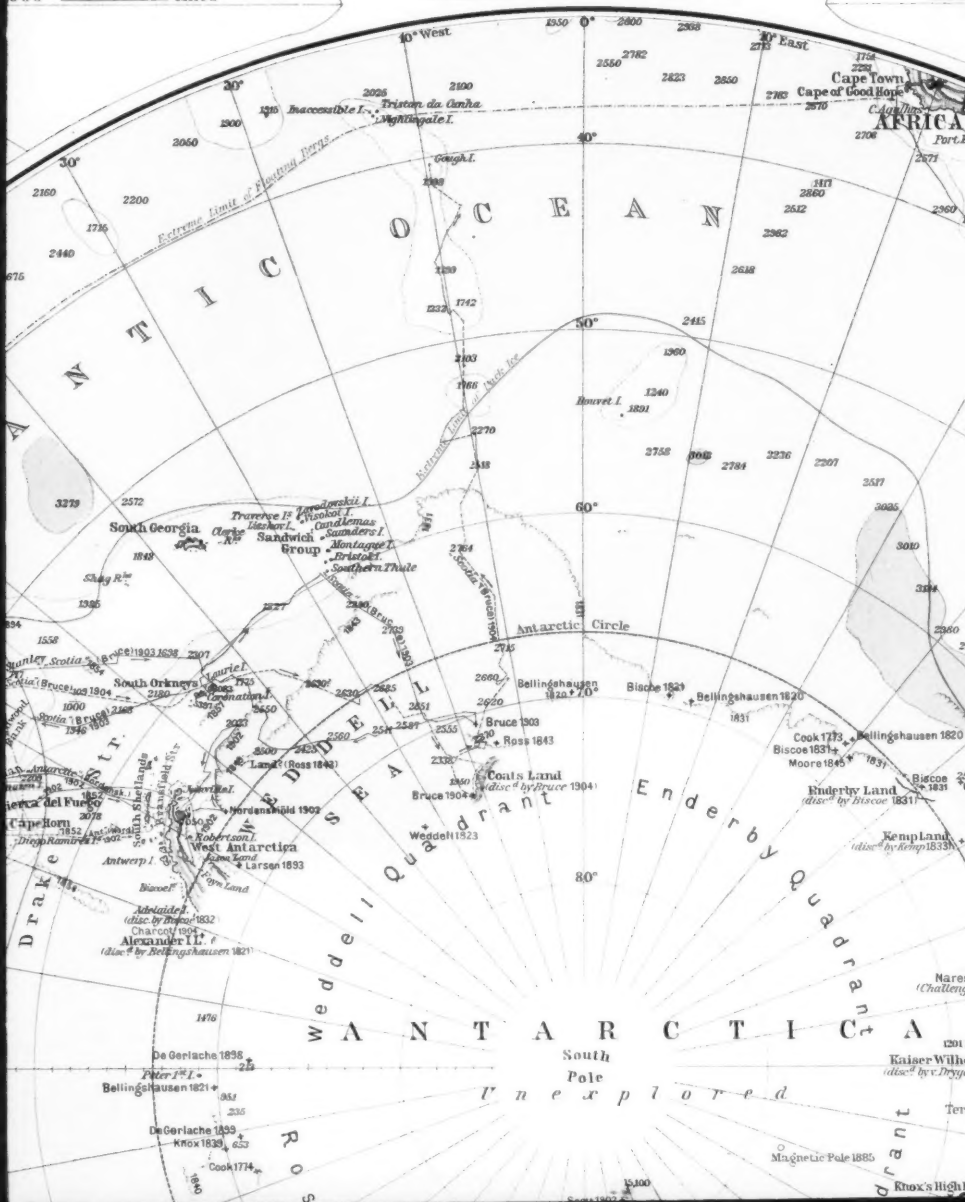
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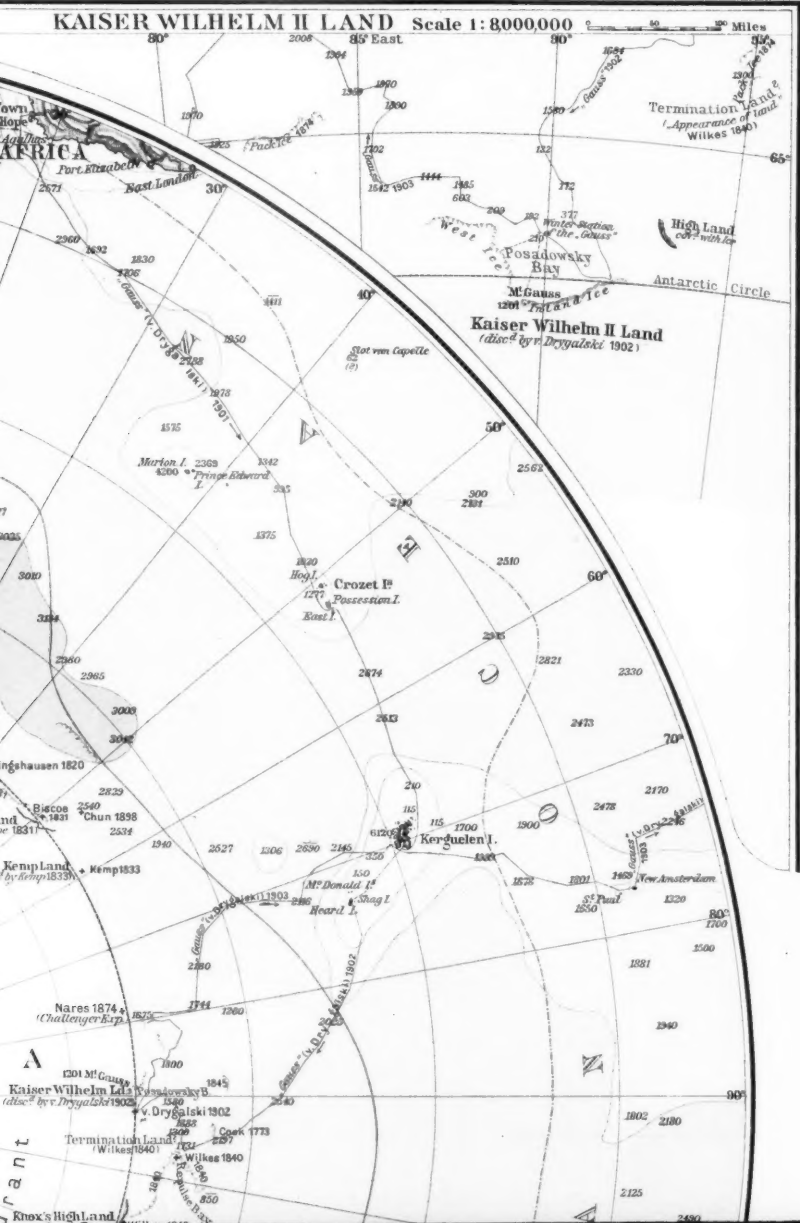
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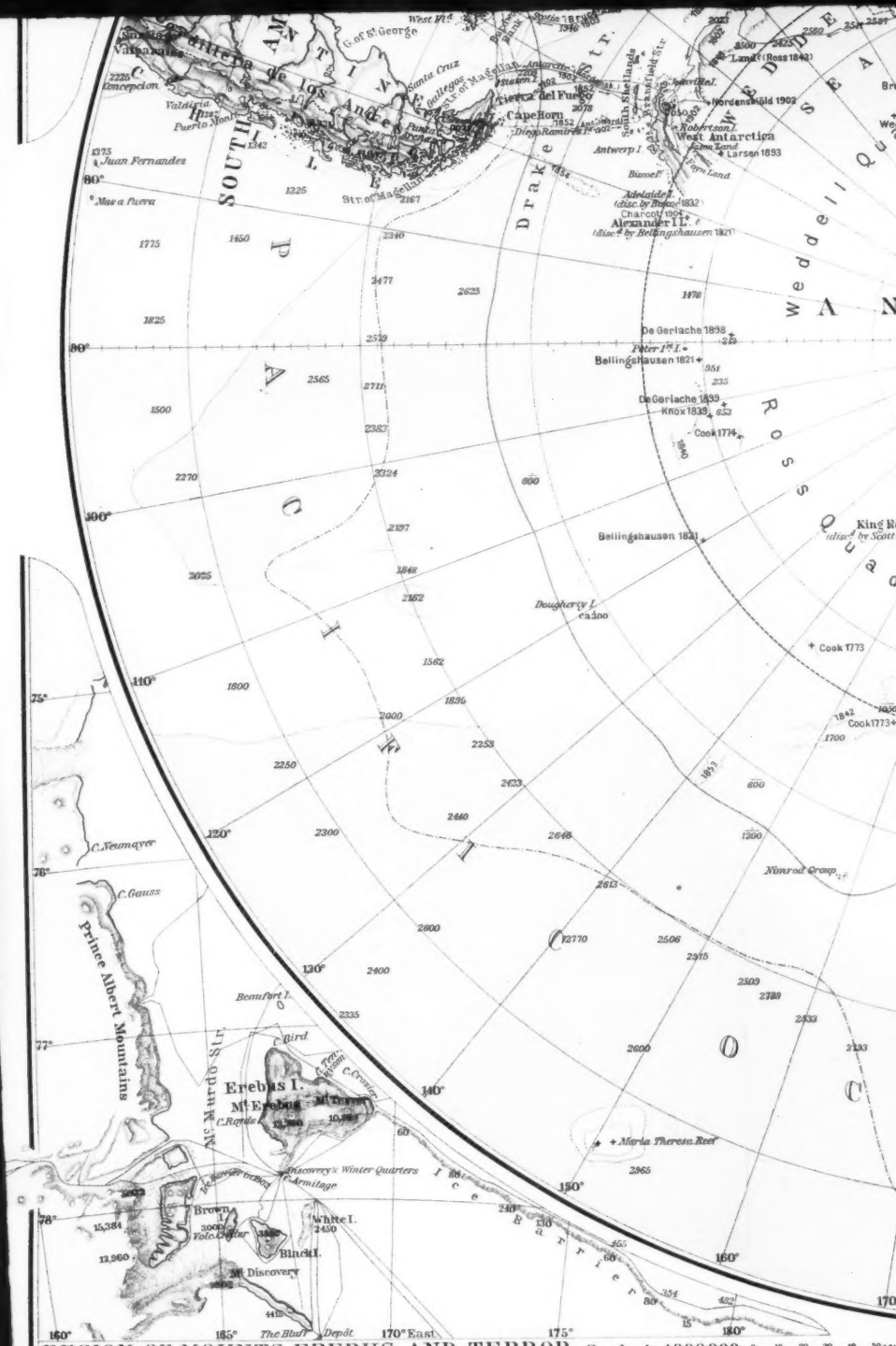
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REGION OF MOUNTS EREBUS AND TERROR Scale 1:400,000

Drawn by D.F. Hans Fischer

Legend: • Scott 1902 Farthest points reached by Explorers & dates
Ocean Depths: □ 0-100, □ 100-1000, □ 1000-2000, □ 2000-3000



Soundings in Fathoms 2793, no bottom reached 600, Feet 15384. The unexplored area is shown in white.

Wagner & Debes' Geogr. Establ. Leipzig